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**FOREIGN
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JPRS Report

Environmental Issues

Environmental Issues

JPRS-TEN-93-003

CONTENTS

16 February 1993

AFRICA

BOTSWANA

- Government, EC Sign Financial Forestry Protection Agreement [Gaborone Radio 18 Dec] 1

NAMIBIA

- Official Denies Radioactive Waste Allegation [NEW ERA 12-18 Nov] 1
Government Using DDT To Combat Malaria in North [Windhoek Radio 5 Jan] 1

NIGERIA

- 'Devices' at Ports To Check Banned Chemical Imports [Lagos Radio 6 Jan] 1

SOUTH AFRICA

- Plans for Black Rhino Conservation 'Controversial' [THE WEEKLY MAIL 5 Nov] 2
Kruger Park Facing Ecological, Social Challenges [THE WEEKLY MAIL 5 Nov] 2
Japanese Ships To Conduct Survey of Antarctic Dolphins, Whales
[Johannesburg Radio 16 Dec] 4
Conference Highlights Satellite Technology for Environmental Planning [THE STAR 5 Nov] 4
South Africa Ozone Research Detailed [ENGINEERING WEEK 20 Nov] 5
Legal Dispute Focuses on 'Hazardous' Fallout From Rocket Testing
[VRYE WEEKBLAD 4 Dec] 7
Nuclear Accident Secrecy Laws To Be Challenged [THE WEEKLY MAIL 18-22 Dec] 8

ZIMBABWE

- Efforts To Save Black Rhino Population Failing [Johannesburg THE STAR 29 Oct] 10
No Evidence Military Involved in Ivory Poaching [Johannesburg TV 18 Dec] 10

CHINA

- Government Plans To Develop Environmental Technology Industry
[CHINA DAILY 20-26 Dec] 11
National Panda Preservation Project Initiated [XINHUA 21 Dec] 11
Illegal Tree Felling, Animal Poaching on Rise [XINHUA 19 Dec] 12
Minister Notes Increase in Forestry Resources [XINHUA 4 Jan] 12
State Imposes Controls on Waste Dumping at Sea [XINHUA 13 Jan] 13
Major Cities To Receive High-Quality Fuel Coal [XINHUA 13 Jan] 13

EAST ASIA

AUSTRALIA

- New Treaty Reduces Japanese Access to Tuna Grounds [Melbourne Radio 21 Dec] 14
Prime Minister Unveils Government Plan for Environment [Melbourne Radio 21 Dec] 14

JAPAN

- Government To Allow International Checks of Chemical Plants [KYODO 13 Jan] 14
Official Urges Government Review of Plutonium Shipments [Tokyo TV 21 Dec] 14

TAIWAN

- Observers To Attend Kenya Rhino Conservation Meeting [CNA 9 Jan] 15

Government Pushes Ahead With CFC Phaseout [CNA 11 Jan]	15
Taiwan Removed From U.S. Driftnet List [CNA 13 Jan]	15
THAILAND	
Survey Reveals Destruction of Northeast Region Forest Cover [THE NATION 5 Jan]	15
EAST EUROPE	
BULGARIA	
New Environment Minister Assesses Policy Problems [BTA 11 Jan]	17
CZECH REPUBLIC	
Klaus Confirms Temelin Nuclear Plant Near Border Will Be Completed [Prague Radio 7 Jan]	17
Prime Minister Comments on Future of Europe, Environment [MLADA FRONTA DNES 9 Jan]	17
HUNGARY	
Microbiological Damage in Danube Basin Studied [KOZTARSASAG 11 Dec]	17
Slovaks Offer To Build Smaller Dams on Danube [Budapest Radio 6 Jan]	19
POLAND	
Conference Examines State of Environmental Protection [PAP 11 Jan]	19
ROMANIA	
Iliescu Views Economic, Social Problems [DIMINEATA 31 Dec]	19
YUGOSLAVIA	
Montenegro Tailings Dump Poses Ecological Danger [VREME 30 Nov]	21
LATIN AMERICA	
BRAZIL	
Project To Stem Amazon Deforestation Launched [O GLOBO 28 Nov]	22
Sao Paulo Governor Obtains Loans for Decontaminating River [Rio de Janeiro TV 17 Dec]	22
COLOMBIA	
Opium Poppy Cultivation Accelerates Deforestation [EL TIEMPO 17 Dec]	23
MEXICO	
Nahua Indians Succeed in Stopping Hydroelectric Project [EL FINANCIERO 28 Oct]	24
PARAGUAY	
Atomic Commission Denies Loss of Radioactive Needle [ABC COLOR 17 Dec]	25
NEAR EAST/SOUTH ASIA	
BANGLADESH	
Asian Development Bank Approves Loan To Check Industrial Pollution [Dhaka Radio 5 Jan]	26
INDIA	
Environment Minister Criticizes Montreal Protocol	26
Kamal Nath Speech [THE HINDU 24 Nov]	26
New Items on Ozone List [DECCAN CHRONICLE 27 Nov]	26

Sabarmati Pollution Threatens Life Downstream [THE TIMES OF INDIA 26 Nov]	27
Government Bans Trade in Ozone-Damaging Chemicals [Delhi Radio 6 Jan]	28

IRAN

Pollution, Shipping Threaten Gulf Marine Life [ABRAR 1 Dec]	28
Arvandrud, Karun River War Debris Cleanup Ordered [ABRAR 3 Dec]	28
Bakhtaran Deforestation, Restoration Efforts Viewed [ABRAR 7 Dec]	28

MOROCCO

Impact of Industrial Waste on Sebou Basin [L'OPINION 19 Nov]	29
--	----

CENTRAL EURASIA

REGIONAL AFFAIRS

G-7 Agreement on Safety Fund for Former USSR Nuclear Plants [Moscow ITAR-TASS 21 Dec]	33
Four States Sign Protocol on Caspian Sea Fishing [Moscow IZVESTIYA 11 Jan]	33

RUSSIA

Environment Minister Reviews Year's Activities, Plans for 1993 [ROSSIYSKIYE VESTI 13 Jan]	33
Yablokov Cited on Moves To Improve Ecological, Health Situation [IZVESTIYA 6 Jan]	34
Russia Makes Little Progress Toward Protecting Environment [ROSSIYSKAYA GAZETA 5 Jan]	35
New Chief of Defense Ministry Ecology Directorate Interviewed [KRASNAYA ZVEZDA 18 Dec]	36
Russia, Denmark Sign Environmental Cooperation Accord [SELSKAYA ZHIZN 14 Jan]	37
Government Takes Steps To Aid Russian Chernobyl Victims [Radio Rossii 21 Dec]	38
Design for NP-500 'Passive' Reactor Unveiled [KOMMERSANT-DAILY 23 Dec]	38
Government To Examine Food Reserves, Nuclear Power Plants [INTERFAX 24 Dec]	39
Number of Incidents at Nuclear Power Plants Increases [ITAR-TASS 6 Jan]	39
Further Development of Nuclear Power Planned [ROSSIYSKIYE VESTI 13 Jan]	40
Continuation of Nuclear Construction Program Debated	40
Industry Spokesmen Defend Decision [ROSSIYSKIYE VESTI 23 Jan]	40
Presidential Ecology Adviser Responds [ROSSIYSKIYE VESTI 23 Jan]	41
Power Plant 'Incidents' Noted [ROSSIYSKIYE VESTI 23 Jan]	42
Physicist: Nuclear Safety Feasible [ROSSIYSKIYE VESTI 23 Jan]	42
Seminar Explores Options for Plutonium Disposal [KOMMERSANT-DAILY 17 Dec]	43
Investigators Target Sale of Radioactive Materials [IZVESTIYA 25 Dec]	43
Activities of 'Radon' Nuclear Waste Facility Profiled [NEZAVISIMAYA GAZETA 26 Dec]	44
Tomsk Action Group Protests Plan for Nuclear Dump [ROSSIYSKAYA GAZETA 12 Jan]	46
Radioactive Sources in Khabarovsk Will Be Registered [ITAR-TASS 6 Jan]	46
Europarlament Delegation Visits Chelyabinsk-65 [PRAVDA 10 Jan]	46
Arkhangelsk Conference on Arctic Ecology, Disarmament Detailed [CHAS PIK 10, 16, 23 Nov]	46
Novaya Zemlya Weapons Testing Exerts 'Powerful Aftereffects' [NEW TIMES INTERNATIONAL No 49, Dec]	55
Komsomolets Designer Says Radiation Leaking From Torpedoes [MOSCOW NEWS No 49, 6-13 Dec]	56
CBW Revelations Dismissed as 'Fantasies' [PRAVDA 19 Dec]	59
Chuvashia Bans Destruction of CW; Udmurtia Wants Delay [KRASNAYA ZVEZDA 12 Jan]	60
Ozone Hole Over Russia Increased 20 Percent in 1992 [NEZAVISIMAYA GAZETA 19 Jan]	60
Decree on Deliveries of Products, Industrial Waste [ROSSIYSKIYE VESTI 24 Dec]	61
Moscow City Government Acts on Industrial Waste 'Shambles' [MOSKOVSKIY KOMSOMOLETS 10 Jan]	63
Government Commission To Address Lake Baykal Problems [ITAR-TASS 21 Dec]	63
Officials Neglect Ecological Study of Proposed Electric Power Plant [ROSSIYSKAYA GAZETA 10 Jan]	63
Oil Extraction Threatens Yamal Peninsula Ecology, Native Culture [MOSCOW NEWS No 45, 8-15 Nov]	64

WESTERN REGION

Belarus: Cleanup of Radioactive Site To Cost R100 Million [Radio Rossii 5 Jan]	65
Ukraine: Law on Protection of Atmospheric Air [Kiev GOLOS UKRAINY 17 Nov]	65
Ukraine: Rukh National Ecological Security Program [Kiev NARODNA HAZETA No 46, Nov]	73
Ukraine: Green Party Declaration Questions Government Policies [Kiev KHRESHCHATYK 12 Dec]	74
Ukraine: International Competition on Saving Chernobyl Under Way	75
Second Conference Held [Kiev KYIIVSKA PRAVDA 10 Dec]	75
French Submit Proposal [Kiev KHRESHCHATYK 12 Dec]	75
Ukraine: Officials Dismissed for Nuclear Waste Storage Violations [Moscow INTERFAX 5 Jan] .	76
Ukraine: Ministry Sees Need for Further Evacuations From Chernobyl Zone [INTERFAX 6 Jan]	76

CAUCASUS/CENTRAL ASIA

Rise of Caspian Sea Requires Scientifically Sound Response [Moscow TRUD 6 Jan]	77
Kazakhstan: Azgir Nuclear Test Range Health Risks Assessed [Alma Ata KAZAKHSTANSKAYA PRAVDA 23 Oct]	78
Kazakhstan: Military Test Sites Disrupt Economic Development, Environment [Moscow PRAVDA 15 Dec]	80
Kazakhstan: Law Seeks To Aid Citizens Affected by Test Site [Moscow PRAVDA 10 Jan]	81
Kazakhstan: Semipalatinsk Tests Trigger Genetic Mutations in Altay [Moscow ITAR-TASS 11 Jan]	81

BALTIC STATES

Baltic Governments Assess Military Damage to Environment [Tallinn THE BALTIC INDEPENDENT 11-17 Dec]	82
Lithuania: Stolen Radioactive Uranium Sunk in River [Moscow BALTFAX 12 Jan]	82
Estonia: Official Concerned Over Unguarded Toxic Missile Fuel [ETA 6 Jan]	82

WEST EUROPE

REGIONAL AFFAIRS

Feasibility of EC Plastics Recycling Directive Evaluated [Zellik BELGIAN BUSINESS & INDUSTRIE Nov]	83
---	----

GERMANY

Rapid Fermentation Process Provides Alternative to Composting [UMWELTMAGAZIN No 11, Nov]	84
Authorities Select Route for Ingolstadt Oil Pipeline [HOSPODARSKE NOVINY 6 Jan]	85

SPAIN

First National Environment Congress Opens [DIARIO 16, 22 Nov]	85
Increase in Production, Export of CFC's Denounced [DIARIO 16, 23 Nov]	86

SWEDEN

Ministry's Draft Recycling Plan Stirs Debate [DAGENS NYHETER 29 Nov]	87
Town Serving as Model for National Recycling [DAGENS NYHETER 3 Dec]	89
Environment Laws To Be Adapted to EEA Standards [DAGENS NYHETER 19 Nov]	90
Country's Law Banning Freon Studied by EC [SVENSKA DAGBLADET 22 Nov]	91
Environment Effort Seen Victim of Recession [DAGENS NYHETER 22 Nov]	91

SWITZERLAND

World Green Cross Ecological Organization Created [AFP 18 Dec]	93
--	----

BOTSWANA

Government, EC Sign Financial Forestry Protection Agreement

MB1912112592 Gaborone Radio Botswana Network in English 1910 GMT 18 Dec 92

[Text] The government and the European Community today signed a financial agreement for a project entitled, Forestry Protection and Development in Botswana. The vice president and minister of finance and development planning, Mr. Festus Mogae, signed on behalf of the government, while Mr. (Dekta Kima), head of the delegation of the European Commission in Botswana, signed on behalf of the EEC.

According to a press release from the Ministry of Finance and under the agreement, the European Community will contribute approximately 8,160,000 pula as a grant. The release states that the forestry program for Botswana is designed to improve the conservation and management of existing woodland resources in order to ensure household energy supply, create employment and income generating opportunity. It further said that the program will contribute to the diversification of the agricultural sector while simultaneously reversing the trend towards deforestation. According to the release the project covers the establishment of research and development station sites in agro-forestry, natural woodland management and species production, and the upgrading of the nursery network.

The release also says emphasis will be placed on northern Botswana where the potential for commercial development for the forest resource on a self-sustainable basis is greater, and also in eastern Botswana where population is concentrated and where the problems of deforestation are severe.

NAMIBIA

Official Denies Radioactive Waste Allegation

93WN0209A Windhoek NEW ERA in English 12-18 Nov 92 p 6

[Text] Reports claiming that radio-active waste had been dumped along the Namibian coast are false.

Reacting to press reports stating that the environmental group, Earthlife Africa, was concerned about unacceptably-high concentrations of "radio-isotopes" near Swakopmund, Permanent Secretary in the Ministry of Wildlife, Conservation and Tourism Hanno Rumpf described the statement as a "poorly conceived attempt at smearing well-regarded conservation efforts in Namibia."

The issue began in September when Prime Minister Geingob invited members of the International Atomic Energy Agency (IAEA) to advise the government on

environmental protection aspects related to rumours and allegations of illegal dumping of toxic waste or radio-active waste in the country.

After evaluation of sand samples taken from Mile 8, north of Swakopmund, a report by the IAEA said it contained thorium, a naturally occurring radio-active element.

"The sample does not contain any radio-active material of non-natural origin. Thus the sample does not constitute any evidence of radio-active waste dumping."

Rumpf said a press statement containing this information, was released to the media on 28 September. But despite this, a journalist from the German ZDF Television station visited the site in early October and claimed he had discovered "much higher radiation levels than was normal, even for a uranium area."

Rumpf said he had furnished Earthlife Africa with a copy of the IAEA report. A copy of the letter from the IAEA was sent to Earthlife on October 26.

"In other words, Earthlife are aware that no radio-active dumping has taken place, but the organisation seems to prefer to fabricate the charges of such practices," he noted.

Government Using DDT To Combat Malaria in North

MB0601060393 Windhoek Namibian Broadcasting Corporation Network in English 1900 GMT 5 Jan 93

[Text] The Ministry of Health and Social Services is still using the toxic agent, DDT, to combat malaria in the north of Namibia, despite the fact that the chemical has been banned in many parts of the world. Reacting to reports that some rural inhabitants are mixing DDT with their mahangu to protect it against insects, the head of the planning unit of the Directorate of Wildlife, Conservation, and Research, Dr. Chris Brown, warned that this will lead to life-threatening calcium deficiencies.

Dr. Brown also warned that DDT can accumulate to such an extent in areas where it has been used over a long period, that it could cause mental illness and infant deaths.

NIGERIA

'Devices' at Ports To Check Banned Chemical Imports

AB0801180093 Lagos Radio Nigeria Network in English 0600 GMT 6 Jan 93

[Text] A network of devices has been installed at the nation's ports to check importation of banned chemicals into the country. It will also prevent hazardous chemicals from getting into the country. The director of the

Federal Environmental Protection Agency, Dr. Evans Ayenor, stated this in an interview with a Radio Nigeria correspondent in Lagos.

He said that importers of industrial and agricultural chemicals were now required to apply for permit and certificate to clear their consignments at the ports. Dr. Ayenor also stated that warehouses of such importers would be inspected periodically. Dr. Ayenor said that it was now mandatory for all countries exporting chemicals to Nigeria to obtain clearance before shipping them to the country.

SOUTH AFRICA

Plans for Black Rhino Conservation 'Controversial'

93WN0156B Johannesburg THE WEEKLY MAIL
in English 5 Nov 92 p 14

[Article by Heidi Kriz: "Big White Hunters Vs. Big Black Rhinos?"]

[Text] Kill to conserve? That's the focus of a ranging debate in conservation circles over a plan by the Bophuthatswana Parks Board that will allow big game hunters to kill endangered black rhino in the Pilanesberg Reserve.

Hunting to generate funding for conservation is a widespread practice in South Africa but so far the killing of rhino has been taboo because of their endangered status.

The controversial scheme is based on research which shows that the ability of the herd to reproduce drops dramatically when there are more females than males in the black rhino population—a situation that will prevail at Pilanesberg in a short while.

With \$250,000 (about R700,000) charged for the head of each rhino shot on safari, it makes sense to bring in big-time hunters to bump off the old bulls responsible for reducing the reproduction rate of the herd, says Pilanesberg wildlife biologist Hanne Lindemann.

But the money-spinning scheme has some members of the conservation fraternity in a tizz. A source in the Natal Parks Board says some staffers are so offended by the idea that a similar project will start in their parks that they have threatened to resign.

"The response was so strong that our decision was to put the idea on ice for some time. We will not be hunting black rhino for the foreseeable future," he said.

Rhino and Elephant Foundation chairman Clive Walker is squeamish about the killing of rhino for money. "I personally would never be able to understand why anyone would want to shoot a black or white rhino. To me the life of a rhino is more important than the tourism it generates."

But Walker respects the management of Bop Parks and acknowledges that the killing of these endangered beasts can generate useful revenue for conservation. "It's acceptable for Pilanesberg based on data that confirms the animal is really about to die."

Lindemann says research techniques are now so advanced that it is possible to predict when old bulls are a year or less from natural death, and it is only these animals—labelled "post-productive males"—that will be the targets for the hunt.

There are currently 16 female and 17 male black rhino at Pilanesberg, a situation that does not lend itself to healthy reproduction. Lindemann says these circumstances also cause the territorial bulls to fight and kill each other more often.

Alf Wills, Bop Parks assistant director in charge of the programme, says they have wracked their brains to come up with a more palatable alternative for generating revenue.

The current cost of running Pilanesberg is R3-million each year and it takes R335,000 to monitor and maintain the black rhino population.

The plan (a yay or a nay won't be given until March next year) proposes a third of the hunt money feed back into the research programme, a third to the conservation of the rest of South Africa's black rhino and the final third into community development.

This would be a windfall for the local community development organisations, made up of independent civic leaders from villages around the park, who decide how to utilise revenue generated by Pilanesberg.

"We are at the crossroads. We have a very powerful ethical pseudo-religious lobby from the northern hemisphere that could undermine effective conservation," says Wills.

"The aims of our project are to re-empower the rural people of Bop with conservation as a form of land use, like agriculture. We think of conservation as being for the people. If people don't want conservation, then it can't, it won't exist."

Kruger Park Facing Ecological, Social Challenges

93WN0156A Johannesburg THE WEEKLY MAIL
in English 5 Nov 92 p 14

[Article by Eddie Koch: "The Fences Come Down Under Oom Paul's Nose"]

[Text] A granite burst of Paul Kruger, the grandfather of Afrikaner Nationalism, which watches imperiously over the main entrance to the game reserve that bears his name is emblematic of the way the Kruger National Park has been shaped by the legacy of colonialism and apartheid.

But the fences are coming down, literally and symbolically, as the erosion of Paul Kruger's old order presents the people who run the park with fresh challenges for their conservation effort.

"We are in a state of stress," says Salmon Joubert, head of the Kruger Park. "And we must respond appropriately with dynamic and creative strategies."

Joubert was referring mainly to the worst drought this century which has caused peasant farmers, their grazing land devastated and livestock dying by the thousands, to look with resentment at the grass that grows on the other side of game fence.

But at a seminar last weekend, Joubert and some of his senior officials asked delegates from three newspapers to give them a wider perspective on ways to improve the park's image in the communities that surround it.

Representatives from the SOWETAN, the NEW NATION and THE WEEKLY MAIL pointed out that the park had earned a negative image in the rural areas around it for the following reasons:

- Game rangers adopt a punitive approach by arresting villagers who jump the fence to steal firewood or poach "meals on legs" for the families.
- Extensive operations by the South African Defence Force, including armed patrols to apprehend refugees from Mozambique and covert operations in the past to support Renamo rebels in that country, have created the impression that the park collaborates with the security forces.
- Entrance fees and accommodation is too expensive for ordinary people from the townships to afford a visit to the park.

The management of the park, the delegate from the SOWETAN said bluntly, appears to be "dominated by white Afrikaner bureaucrats," a charge dispelled by the immediacy of management's response.

Media representatives were thanked for their contributions and a committee was set up to organise a larger conference of all major political bodies active in the region of the park to discuss ways in which the above issues, and others, could be addressed.

National Parks Board officials also pointed to a range of activities which have already been undertaken to improve the quality of life for people living in settlements on the borders of the park.

Water has been provided to villages in parts of KaNgwane where rivers have dried up, black artisans from neighbouring villages are encouraged to manufacture and sell crafts and curios to Kruger's tourists, advanced plans are underway to build small business estates in some of the large townships nearby, park officials train residents to grow communal gardens, trees are supplied from a nursery in the park for village wood lots, recycling schemes provide employment and revenue for people in the township of Namakgale, near Phalaborwa.

Herbal gardens have been initiated in some areas so that indigenous healers can harvest roots and plants needed for traditional medicines, subsidised day trips for local schoolchildren are encouraged and "ecoclubs" have been set up at nearby schools with the cooperation of headmasters in the area.

But Joubert realises this is just a beginning and he is keen to gather advice from a range of political players about more wild-ranging measures—including schemes whereby representatives from rural neighbours participate in policy formulation for the park—that can deal with the animosity that is smouldering on his borders.

There is also a growing realisation that the policy of fencing off valuable species from the outside world may not be the best way to ensure their survival.

In the early 1960s, for example, more than 90 percent of Kruger's wildebeest and zebra populations were lost when a fence was built between the Kruger Park and privately owned reserves at Timbavati and Sabi Sands as the animals' traditional migration routes were severely disrupted.

This is only the most graphic example of the way in which the policy of containing natural ecosystems has led to a phenomenon which biologist Roy Siegfried calls the "zombi syndrome," a reference to animal populations that are in a state of "living dead" because they cannot reproduce naturally inside the boundaries of reserves (see accompanying story).

So the park is literally taking down its fences, forcing its management to deal with new challenges and exposing it to challenging ideas about the management of game reserves.

Before the year is out the barrier between Kruger and the private game reserves on its western border will come down. "Private enterprise has developed a tourism culture that consists of high-income lodges and people travelling around in open landrovers. This does not conform to our guidelines for a national park but we acknowledge this as an important form of tourism," says Joubert.

"We will set up a loose coordinating body with the private reserves and this will broaden the scope of experience and facilities we can offer."

Even more challenging is a plan to take down the eastern fence so that the park can be linked up with a swathe of territory that has been depopulated because of the war in Mozambique.

Joubert recognises that the Mozambican government is likely to adopt a different approach to national game reserves that will be created as part of a programme to reconstruct that country's post-war ruraleconomy.

"Parts of the conservation areas in Mozambique could be managed jointly with us as part of a large national park but other areas can take the form of mixed game

and cattle farming, multiple forms of land use where rural development and conservation take place side by side. We see the idea of a transnational game reserve as a peace park."

Then there have already been approaches to the governments of KaNgwane and Gazankulu for reserves run by the homelands to be incorporated into the park, with the same kind of management autonomy that is envisaged for Kruger's neighbours to the east and west.

"The mission of the Kruger National Park and my mission is to conserve large natural ecosystems and viable populations of all biota ranging from the big five to small invertebrates. The more intact these ecosystems are the nearer I come to fulfilling my mission," says Joubert.

"To do this the national park system would like to live in harmony with local people and its neighbours in a way that promotes an ethic of sustainable land use in these areas."

A series of experiments are taking place beneath the stony gaze of Paul Kruger that will turn the park into a very different institution to the one the Boer leader created.

Japanese Ships To Conduct Survey of Antarctic Dolphins, Whales

MB1612142492 Johannesburg Channel Africa Radio in English 1100 GMT 16 Dec 92

[Text] Two Japanese research ships leave Cape Town today for the 15th annual survey of dolphin and whale populations in Antarctic waters.

This will be done under the auspices of the International Whaling Commission [IWC], and scientists from four countries, including South Africa, are aboard.

No dolphins or whales will be captured or killed during the research, which is aimed at establishing population trends in the various species in the Southern Hemisphere.

South Africa's Save the Whale movement and Green Peace in Australia have objected to the research. They say the results will be used to justify calls by countries like Japan for the scrapping of the international moratorium on commercial whaling. However, South Africa's commissioner to the IWC, Dr. Louis Botha, says such a decision will depend on the consensus of all member countries of the IWC.

Conference Highlights Satellite Technology for Environmental Planning

93WN0166A Johannesburg THE STAR in English 5 Nov 92 pp 8-9

[Article by Anita Allen]

[Text] Observation of South Africa by satellite is the fastest way of gathering information about the environment at an affordable price and offers one of the most hopeful aids to meeting the challenges ahead.

This was the consensus among delegates who attended a recent conference organised by the Micro-electronics and Communications division (Mikomtek) of the CSIR [Council for Scientific and Industrial Research] and Spot Image, the French company which markets SPOT satellites. The aim of the conference was to highlight the applications, benefits and capabilities of satellite remote sensing data.

Two researchers from the University of Natal used a single SPOT image to detail all the open spaces in Durban. According to the project presenter, Stephen Piper, open space was all that land not allocated for use.

Conflict

Their project successfully identified 27 types of open space, distinguishing forests from parks, dune communities, natural vegetation types (grasslands, bushveld, scrub, reeds), sugar cane, race courses, golf courses and sports fields. They also identified roads and buildings practically down to the last shack, and high density residential areas through to low density areas.

Summing up, Piper said that South Africa was going into an era in which there would be a lot of conflict over land, and a lot of decisions would have to be made. People needed to be equally well informed, he said. Satellite imagery was an appropriate technology for gathering such information without going through someone else's interpretation and was cheaper than any other.

Taking this kind of information a step further, computer boffins at the CSIR have developed computer programmes which automatically analyse changes in land use over time. Dr R Schiefer of the division of building technology (Boutek) said traditional planning methods were based on the assumption that there was time for thorough planning and that, in real life, events could be made to follow these plans. He said the reality was that rapid urbanisation was happening and what was needed was a fast-monitoring system. The Macro Urban Monitor system developed by his division was an automated land use classifier developed for such rapid monitoring.

Turning to changes in the rural environment, Alan Franzsen of Anglo American compared SPOT imagery of a section of the Limpopo with data collected over the last 20 years to detect changes. He found that during the 20-year period, forests had been denuded mainly for agriculture. This had impacted on the flow of the river, as well as requiring 300 billion litres of water in an area already under stress from a lack of water. He found there was a 300 percent increase in vegetation being cleared for agriculture and this rate of change for living things was critical.

The Limpopo was a dynamic system, heavily influenced by man, he said, and such information was critical for management and planning.

Geologists were solidly represented and their projects demonstrated that a single satellite image could generate the kind of detail for geological mapping that has previously taken years to accumulate.

Professor Morris Viljoen and associates of the University of the Witwatersrand looked at imagery of the granite-greenstone area between the Murchison and Sutherland ranges of the northeastern Transvaal, an area adjoining the Kruger Park which was largely unmapped and poorly understood. He said new insights into the geology were gained from the imagery that considerably improved existing geological mapping and effectively amounted to a reinterpretation.

The Wits project also revealed serious land degradation in portions of their study area that belonged to Gazankulu and a second presentation with Nick Franey of Anglo American looked at vegetation and soil degradation. After field studies, the Wits group concluded that rural settlement and over-stocking far exceeded the carrying capacity of the land.

"Disastrous degradation of vegetation and erosion has led to greatly reduced yields from lands and to a greater impoverishment of the population," Professor Viljoen said. "Comparisons with a 1968 aerial photograph showed nothing had happened at that stage so, in places, soil that has taken thousands of years to form has been destroyed in a few decades," he said. A similar analysis for the whole of South Africa could be done in a matter of days, he added.

Another project presented by Professor Terence McCarthy of Wits University's geology department looked at drainage patterns in the Okavango Delta. Water distribution of this area constantly changes as channels dry up, become blocked by mud, sand and ultimately vegetation. A SPOT image was processed to distinguish densities of vegetation which field studies confirmed related directly to water loss.

The higher the density the less the water. The study was able to identify old and new channels and swamp areas, as well as water flow and drainage patterns.

SPOT circles Earth about every 100 minutes, that is 14 times a day and, in every 26-day-cycle, it covers the whole globe. During that time its onboard sensors can relay images in 60 km by 60 km bits (3,600sq/km) from anywhere in the world. These can be processed in about one hour. Fields and plots down to a quarter of a hectare can be identified, more technically a ground resolution of 20m multispectral and 10m panchromatic. In addition, oblique viewing is possible which is ideal for developing topographic or digital elevation models.

Mikomtek's Satellite Applications Centre (SAC) at Hartebeeshoek has been receiving data from satellites

going back to 1972, and has recorded the information on magnetic tape which is stored in its archives. Presently it receives, processes, stores and distributes data from four satellites: SPOT, NOAA, LANDSAT and METEOSAT.

Each system offers distinct capabilities and specific data about the earth and its resources, which is then transmitted back to receiving stations such as the SAC where it is processed and made available in whatever form is needed, photographic images or digital data on magnetic tape. Costs range from R200 to R7,000 depending on what kind of end product is needed.

Optical sensors used on satellites are sensitive to electromagnetic radiation in the visible range and beyond. The extent to which natural materials reflect and absorb radiation differs, providing a unique spectral reflectance curve for each material according to the wavelength in the visible and near infrared regions. Optical sensors cannot penetrate cloud cover and only operate efficiently in daylight. Other sensors, such as radar imaging techniques and thermal infrared sensors, operate at night and can also penetrate cloud.

The applications of remote sensing data abound. The science is only about 20 years old, and the market is growing at a phenomenal rate of 45 percent a year, but its products are not applied to the extent that they could be.

Applications range from soil and crop mapping and monitoring for agriculture to measuring levels of solids and algae in dams and the incidence and extent of veld fires, or other disasters such as drought, floods, landslides, oil slicks and earthquakes.

Benefit

As applied to forestry, remote sensing data can be used to map tree types, to assess deforestation and defoliation, and where damage can be quantified in terms of dead tree counts and canopy density.

In oceanography it can be used to generate sea surface temperatures, movements of large shoals of fish, or wave heights and wind speed. The ERS1 satellite, launched by the European Space Agency, which is equipped with a radar altimeter, showed that on the night the Oceanos went down, wave height and wind speed off the Wild Coast was among the worst anywhere on the globe.

There's a lot of information available in the SAC archives, with more coming in daily. Information that can be used to see southern Africa as never before. Today's technology can benefit decision-makers. What is needed is for resource managers, leaders and planners to put it to good use.

South Africa Ozone Research Detailed

93WN0206A Johannesburg *ENGINEERING WEEK*
in English 20 Nov 92 p 5

[Excerpts] *ENGINEERING WEEK* invites personalities from the business and political sectors to discuss issues pertinent to the changing South Africa [S.A.].

Ernst Brunke from the CSIR's [Council for Scientific and Industrial Research] Division of Earth, Marine & Atmospheric Science and Technology is managing trace gas research at Cape Point. He discusses S.A.'s research work which is aimed at assisting international environmentalists, as well as what is envisaged for the future.

The term "ozone" has become a media buzzword, with which even school children are familiar these days. Ozone (O_3) is one of the most important trace gases in the atmosphere, both from a beneficial as well as from a detrimental point of view.

Detrimental Consequences

[Passage omitted]

The recent discovery of an ozone hole in the northern hemisphere has once again highlighted international environmental concern and prompted some western countries to act with greater speed in the cessation of their CFC production.

In view of the high incidence of sunshine over S.A. and due to this country's relative close proximity to Antarctica, it is appropriate to ask what research has been done in S.A. and what is being envisioned for the future?

Sanorp

In an endeavour to coordinate and direct ozone related research in S.A., a steering committee dubbed Sanorp (South African National Ozone Research Programme) was formed last year under the auspices of the Department of National Health and Population Development. Sanorp comprises the CSIR's Division of Earth, Marine and Atmospheric Science and Technology, Natal University and the Weather Bureau.

All three institutions are actively engaged in finding answers to different aspects of the ozone problem.

Besides Sanorp, other organisations are also involved in ozone research. These include Eskom, the University of Cape Town and the National Botanical Institute. [passage omitted]

In the northern hemisphere an overall ozone increase of about 1 percent per year has been recorded. During the northern summer, urban atmospheres in Europe are especially susceptible to the formation of ozone, which typically gave rises to unwanted photochemical smog episodes.

In South African cities too, the issue of photochemical smog warrants attention, especially once unleaded petrol is introduced in S.A. within the next few years, a step which may not be as environmentally friendly as appears at first glance. Lead-free petrol, which is refined to a larger degree to produce the required octane rating, produces a higher concentration of ozone precursors such as hydrocarbons and NO_x , if not removed by catalytic converters.

However, since catalytic converters are expensive, they are unlikely to become compulsory while the motor industry is depressed.

The likelihood of an increase in ozone levels and concurrent photochemical smog in South African cities is hence real. This aspect is currently being studied through smog chamber work by the Energy Research Institute of the University of Cape Town.

Unlike measurements in the northern hemisphere, the 10-year-long ground-based ozone record at Cape Point has so far not revealed a definite trend. This result, which should not encourage complacency, suggests that the concentrations of nitric oxide (NO) are still below a certain threshold (10 pptV) in the background marine troposphere of the mid-latitudes of the southern hemisphere.

Cape Point

Furthermore, the Cape Point record shows that the seasonal cycle of tropospheric ozone is not fully understood yet. A popular hypothesis suggests that the summer low and winter high is a reflection of the seasonality of solar intensity, which peaks during December/January and is at a minimum during June/July.

However, indications for long-range transport from areas in central Africa, characterized by biomass burning, also exist. In addition, the postulate that ozone from the stratosphere represents a source for tropospheric ozone, also prevails.

A unique opportunity to test this hypothesis has recently arisen after instrumentation for the measurement of Beryllium-7 ($Be7$), a tracer for stratospheric air, was installed at Cape Point during February this year.

A comparison between the Weather Bureau's 1964-72 and 1990-91 column ozone data has revealed the following: A six-fold increase in ozone levels within the lower 6 km of the troposphere, has taken place since the late 1960s. It is suggested that this rise is due to an increase in ozone forming nitrogen oxides, as a result of increased urbanization in the PWV/OFS [Pretoria-Witwatersrand-Vereeniging/Orange Free State] area.

Should this indeed be the case, the result is unlikely to be representative of the Southern African region as a whole, a deduction which would also be in line with the lack of a positive ozone trend seen at Cape Point.

In contrast to the elevated levels recorded in the troposphere, an observed decrease in ozone concentration (between 7 and 8 percent) has been detected in the upper troposphere and lower stratosphere. This finding is in accordance with satellite observations which have shown evidence of an overall global ozone decrease in the mid-latitudes of the southern hemisphere.

Stratospheric ozone is produced mainly in the tropics from where air transport moves ozone rich air to higher

latitudes in both hemispheres. These processes give rise to ozone variability over large geographic regions and can best be studied by means of satellite data which yield an overall global picture.

The University of Natal has investigated the temporal and spatial variations of TOMS ozone data for the Southern African region. Their work has shown that stratospheric ozone is subject to large-scale chemical and dynamical processes, which implies that synoptic air movements and ozone variability are intimately linked. Hence it comes as no surprise that mid- and upper-tropospheric weather systems are influencing the total ozone variations over Southern Africa.

Ozone Build-up

This build-up of ozone in the southern mid-latitudes gives rise to a characteristic seasonal cycle with an ozone maximum in spring and an ozone minimum during summer. During summer/autumn, when the polar vortex has already collapsed, the velocity of air transport south speeds up again with a concomitant thinning of the ozone column aloft.

The difference between the seasonal cycles of total ozone and ground-based background ozone as seen at Cape Point highlights the large degree of independence that exist between tropospheric 'ozone reservoirs'.

Future

What is envisaged for the future?

- Ozone levels and associated photochemical smog in our large cities should be closely monitored in view of the anticipated introduction of unleaded fuel.
- One or more stations should be set up to monitor biologically harmful ultra-violet radiation (UV-B), which is bound to rise as total ozone falls. It would be appropriate to send out regular warnings to the public, if high levels of UV-B are being encountered.
- The research work conducted on stratospheric ozone involving satellite data, spectrophotometric measurements and balloon ascents should be consolidated to obtain a better understanding of the processes governing column ozone on a synoptic scale over Southern Africa.

Past research has shown that ozone is full of observational as well as theoretical surprises—future endeavours may likewise not disappoint us!

Legal Dispute Focuses on 'Hazardous' Fallout From Rocket Testing

93WN0205A Johannesburg VRYE WEEKBLAD
in English 4 Dec 92 p 11

[Report by Ronnie Morris]

[Text] Toxic acidic fallout from rocket engines tested at Hangklip by Somchem—an Armscor [Armaments Corporation of South Africa] subsidiary—is hazardous to

humans, plants and animals and is a severe respiratory irritant, the Cape Supreme Court was told this week.

The fallout from also causes inflammation and ulceration of the respiratory tract.

This and other damning evidence emerges from papers filed in the bitter legal dispute between the small Rooi Els Local Council and Somchem, the Overberg Regional Services Council and the Administrator of the Cape over Somchem's use of portion 186 near Hangklip to conduct propellant tests.

The Rooi Els Local Council wants Somchem out of the area, which is regarded as environmentally sensitive.

Several experts have condemned its use as a testing site and warned that the concentration of hydrochloric acid generated by rocket testing is inappropriate and risky to people and the nearby water supply.

Jacob Pieter van Wyk, chairperson of Somchem's Board of Directors, defends the location of the test site however and says Armscor affiliates are now turning its expertise to the commercial market.

Although development of the space programme by Denel—another Armscor subsidiary—was in the early stages, negotiations for international contracts were far advanced, he says.

If S.A.'s space programme succeeds, he says, it will create 4,000 jobs this year and 11,700 by the year 2000, earn R400,000 per year in foreign exchange per employee, an average annual income of R565 million and an annual income of R750,000 for the Overberg Regional Services Council.

It took years to build the Hangklip facilities and should Somchem be ordered to relocate, the space programme will be halted for several years. This would be fatal to S.A.'s attempts to enter the commercial space programme, says Van Wyk.

IN AN AFFIDAVIT James Ronald Bull, professor of Organic Chemistry at UCT [Universities of Cape Town], says he has no doubt that Somchem was using solid propellant in the rocket motors on the test.

The generation of a highly localised concentration of hydrochloric acid by the rocket testing entails risk to human, animal and plant life in the vicinity, he says. Such a generation of acid is inappropriate in an ecologically sensitive area, close to human habitation and a source of drinking water since any emission of toxic and acidic material entails a risk.

The level of local expertise and resources for research and development in local propellants makes it extremely unlikely that a major new innovation can be expected in South Africa in the foreseeable future, says Bull.

"Local exploitation of the rocket propellants is thus almost totally reliant upon importation and adaptation of existing technology."

The present state of such technology in the U.S.A. suggests that the solid propellant option, presently being evaluated at Hangk'ip, was unlikely to be changed in the near future, says Bull.

Steve Aftergood, a senior research analyst at the Federation of American Scientists in Washington D.C. and co-director of the Project on Space and Environment, says in papers the principal exhaust products of solid rocket propellants include hydrogen chloride, aluminium dioxide, carbon monoxide, nitric oxide and water vapour.

"The most problematic exhaust product of the solid rocket propellant is hydrogen chloride which, in the presence of moisture, forms hydrochloric acid, a highly corrosive and toxic substance."

According to studies by the National Aeronautics and Space Administration (NASA) at the Kennedy Space Centre in Florida, acidic fallout from space shuttle launches caused as much as 40 percent leave damage to one plant species 5 kilometres away from the launch pad.

Acidic fallout has been detected as far as 88 kilometres away, says Aftergood. Fish deaths are observed in nearby lagoons after every space shuttle launch at the Kennedy Space Centre and between 100 to 1,000 dead fish are seen within 1 to 2 kilometres after each launch due to the highly acidic particles from the solid rocket exhaust.

A rapid increase in acidity damages the gills of fish and they suffocate but the pollution is diluted within a day. According to Aftergood, a NASA warning to visitors at the Florida launch site reads: "The powdery residue from solid rocket booster exhaust plumes can be deposited as much as five miles downwind of the launch site.

"This deposition can irritate the eyes and respiratory tract, or could conceivably damage the finish of an automobile."

The chlorine in solid rocket exhaust has also been implicated in destruction of stratospheric ozone, albeit on a far smaller degree than other factors such as Chlorofluorocarbons (CFCs), he says.

The use of solid rocket propellants has increasingly become a subject of concern and litigation on environmental grounds over the last few years, says Aftergood.

TIM FURNISS, a British journalist and expert on the space flight and the launch vehicle industry, says it is possible that Denel has the potential to launch a small research satellite of its own or to provide a launcher with the capacity to put a small satellite in space within a few years.

"However, any claim to the effect that Denel will have a thriving market within the next five years for any launcher that it manufactures is extremely optimistic."

There are only two commercial markets for launch vehicles—to stationary orbit and to low earth orbit respectively, says Furniss.

Denel has stated its intention of competing in the much smaller endless lucrative market for launch vehicles to low earth orbit (LEO).

The LEO market is however still extremely ill defined and could not be described as profitable. The only major participant is an American corporation which holds 90 percent of the contracts till 1995.

Other U.S. LEO launcher companies are struggling to survive and plans by Russia, Japan and certain European countries remain on the drawing board.

"Any player with an unproven launcher track record is highly unlikely to make an impact on the commercial market—even if that market grows—until well after 1995," says Furniss.

"Any present claim that Denel could place South Africa's own network of Iridium class satellites into orbit are highly optimistic. Their market potential and feasibility are yet unknown and will continue to be so for some considerable time," he says.

Furniss said he understood from media reports that Denel has only tested a two-stage launcher on sub-orbital flights and although plans for a larger launcher may exist it cannot be taken seriously.

The financing of Denel's intended space programme will involve expenditure of billions of dollars before any return accrues, he says.

—By agreement between the parties, Mr Justice H.L. Berman postponed the application to May 17 next year to give Somchem, the Overberg RSC and the Administrator time to reply to several witnesses, including Bull, Aftergood and Furniss.

Nuclear Accident Secrecy Laws To Be Challenged

93WN0215E Johannesburg THE WEEKLY MAIL
in English 18-22 Dec 92 p 21

[Article by Eddie Koch]

[TEXT] Spurred by an accident at the Pelindaba nuclear plant last week—which sent a plume of uranium dust into the air above a nearby residential area—Earthlife Africa is planning a campaign against "draconian secrecy clauses" in the Nuclear Energy Act.

Said Henk Coetzee, representative of the Pretoria branch of Earthlife Africa: "We have been in contact with residents from Broederstroom near the Pelindaba nuclear reactor and, together with them, we are planning

a challenge to a law which allows the minister of energy affairs to suppress vital public information in the case of a nuclear accident."

The organization says that Dr Waldo Stumpf, chief executive of the Atomic Energy Corporation (AEC), last week refused to provide the organization with data about the leakage of uranium dust into the atmosphere—as he is entitled to do in terms of the Nuclear Energy Act.

The AEC confirmed the incident last week, saying an accidental release of uranium hexafluoride occurred at the Pelindaba site on December 9 as a result of a flange-seal breakage on a condenser.

The incident was of a serious nature, requiring that it be reported immediately to the Council for Nuclear Safety as well as to the International Atomic Energy Agency.

"The exact amount of material released will be determined later but it is estimated that a maximum of 100kg was released," the AEC press release said. "Uranium hexafluoride immediately reacts with moisture in the air, resulting in the formation of solid uranyl fluoride. Therefore, the effect of the release was mostly confined to the inside of the building. A small quantity of the material was, however, released to the atmosphere."

Coetzee said Earthlife was aggrieved by the AEC's handling of the matter on three counts:

- Stumpf allegedly refused to provide Earthlife with information about the extent of the accident, or with data relating to the radioactive level of the uranium cloud that was released through stacks at the reactor plant.
- The AEC issued a press release only after the organization had been tipped off about the accident by an employee at the plant. "If this had not happened, the public might never have been informed about the incident."
- Tough clauses in the Nuclear Energy Act give the government vast powers, through the minister in charge of nuclear energy, to suppress information about the nuclear industry.

The Act requires that the AEC report all accidents and abnormal occurrences at nuclear installations to the Council for Nuclear Safety. The latter is a statutory body which monitors the activities of all organizations licensed to handle radioactive materials, which can then appoint inspectors and make public information relating to the event.

But environmental lawyer Peter Lazarus, who works for a consultancy called Environmental Options, notes an extraordinary clause in the Act which states that whenever the minister believes it is in the interests of state security, he can act in terms of the legislation without revealing what he has done, and without giving reasons.

Except for certain information in respect of nuclear accidents, he can also exempt the AEC or anyone from any provision of the Act.

Lazarus adds that although the AEC and the Council for Nuclear Safety are set up as normal companies, they are exempt from the provisions of the Companies Act, and are thus constituted above the law.

"Under the law, the government is required to gazette information about dangers posed to the public only when the AEC is unsure whether there are people in an area that has been identified as a danger zone."

Other clauses in the law, Lazarus notes, prevent publication of information relating to "anything done by or on behalf of the minister or the corporation or any subsidiary company" in the exercise of their powers. Licenses are granted to the AEC for various purposes, but Lazarus says it is alarming that the public has no access to the conditions attached to the licenses, and thus could not know whether they were being complied with.

Although, through the Council for Nuclear Safety, the Act tried to establish a separate body to monitor the safety of the nuclear industry, the very close relationship between the council and the AEC made this impossible, Lazarus adds.

Earthlife intends to write to President FW de Klerk to lodge a protest about these sweeping secrecy clauses and urging him to review the legislation as a matter of urgency.

Nic Ligthelm, public relations officer for the AEC, acknowledges the law allows his corporation to withhold information from the public, but stresses it was aimed at protecting the nuclear industry from sanctions and sabotage: "It was never the intention of the ACT to screen matters relating to health and safety from the public. You must remember that this law has its origins in a period when there were strict sanctions against the nuclear industry in the country. It is unlikely that the minister or the chief executive would withhold information of this nature."

Asked if last week's accident would have been reported had it not been leaked to Earthlife by an employee, Ligthelm said it was not routine practice to issue press statements about occurrences reported to the Council for Nuclear Safety.

"But if that's what the public wants, then we will issue these statements regularly. We do not want to hide anything and I will talk to Dr Stumpf about making regular press statements about these matters."

Earthlife remains unhappy about these guarantees. It points out that the AEC relied on the discretion of a few powerful individuals, rather than a statutory obligation to report details of nuclear accidents to the public.

"The public has a right to know about environmental matters that may affect their health and safety," says Coetzee. "This right should be enshrined in the constitution and the law."

A request from THE WEEKLY MAIL for data from the AEC's computer dispersion model about the movement and radioactivity levels in the uranium cloud released from the stacks at Pelindaba (which means "the talking is over") last week was turned down on the grounds that this would be "classified" information. However, when pressed on the matter, Ligthelm said he would request permission for this data to be made available once a report had been submitted to the Council for Nuclear Safety.

Stumpf was not available to comment on claims by Earthlife that he had refused to make this information available to the organization and, through them, to residents living near Pelindaba.

ZIMBABWE

Efforts To Save Black Rhino Population Failing

93WN0157A Johannesburg THE STAR in English
29 Oct 92 p 21

[Unattributed report: "Rhino Tragedy on Us—Harare"]

[Text] Harare—The fight to save the world's largest remaining herd of black rhinos from extinction is nearly lost, Zimbabwe conservationists say.

In what the conservationists say is one of the worst wildlife catastrophes of recent times, poachers' guns have cut down 80 percent of the herd in a few years.

Fewer than 400 of the huge prehistoric beasts now survive in Zimbabwe out of an estimated 2,000 in 1989, according to the respected Zambezi Society conservation group.

There is in effect a real war going on out there, says spokesman Dick Pitman, pointing out that game rangers have killed more than 150 poachers since they began Operation Stronghold in 1985 to protect the rhino.

But driven by poverty and retail prices for rhino horn of up to \$30,000/kg (R88,500) in Asia, where it is used as a medicine, the poachers keep coming, mostly across the Zambezi River border from Zambia.

Struggle

Pitman says their weapons and techniques are becoming increasingly sophisticated, while the Department of National Parks and Wildlife struggles to defend vast swathes of wild tropical bush on an inadequate budget.

The Zambezi Society has joined forces with three other environmental organisations to campaign for a last-ditch

stand to save what they call a global heritage, promoting a "Rhino Day" and petitioning government to step up anti-poaching efforts.

Although the Zimbabwe government has come under fire for doing too little too late, Pitman also attacks environmental "loudmouths" in the international community.

He says many countries, including "some of the loudest mouths of the recent CITES controversy," became "strangely silent" when asked for cash to support a radical programme to dehorn the rhino.

At a meeting in Japan earlier this year, CITES (the Convention on International Trade in Endangered Species) rejected Zimbabwe's bid to legalise controlled trade in rhino horn and elephant ivory to raise money for conservation and reduce the black market demand which encourages poaching.

It was the dehorning programme, with its intensive air and ground search for rhino, which produced the shock figures on the number left in Zimbabwe.

In January this year, the Department of National Parks believed it still had nearly 2,000 rhino in the wild.

Realistic

Now, says Pitman, "the most realistic estimate we can arrive at is maybe 230 black rhino surviving in the wild." Another 150 in private conservation areas would give a total of 380.

He says just enough animals would survive to create viable breeding groups if protection measures are immediately stepped up. The alternative, says a statement by the combined conservation groups, is extinction within two years.

Pitman warns that the black rhino is a symbol of a far deeper problem and "an early warning of what we can expect in the future unless something is done, and done very quickly, to protect all valuable wildlife."

He adds: "The elephant is next on the list...all the evidence points out a steady increase in elephant poaching."—Sapa-AFP

No Evidence Military Involved in Ivory Poaching

MB1812165692 Johannesburg Channel Africa
Television in English 1200 GMT 18 Dec 92

[Text] A Zimbabwean commission of inquiry has found no evidence that the military was involved in ivory poaching. Zimbabwean Environment Minister Herbert Murerwa said no concrete proof was submitted by the commission's investigators or conservationists. They alleged soldiers had killed hundreds of elephants in the Gonarezu Game Reserve. Murerwa dismissed the allegations as rumor and speculation, which apparently arose when troops sealed off the reserve at the end of 1987 to stop incursions from Mozambique.

Government Plans To Develop Environmental Technology Industry

HK2012080492 Beijing CHINA DAILY (BUSINESS WEEKLY) in English 20-26 Dec 92 p 8

[Report by Xiao Liu: "Technology To Create a 'Greener' Environment"]

[Text] Environmental pollution, the scourge of rapid industrialization, is staring China in the face.

To ensure that China's current economic growth doesn't turn into an environmental nightmare, the country is setting its sights on developing an environmental technology industry.

Demand for such a sector, triggered by the country's dynamic industrial growth and the current construction boom, is "surging," according to an environmental expert.

Qu Geping, director-general of the National Environmental Protection Agency (Nepa) earlier this month called the manufacturing of environmental protection equipment "one of the vital steps for the country to take if it wants to pursue a clean environment."

The estimated annual output of the industry, which emerged in China only a few years ago, is 7 billion yuan (\$1.2 billion) in 1995 and 10 billion yuan (\$1.8 billion) in 2000, compared with the current level of billion yuan (\$526 million).

In addition, the agency plans to develop at least 150 kinds of world standard environmental protection equipment from 1991-95.

Efforts in this field will focus on contamination monitors and machines to reduce pollution caused by burning coal as well as water-purification and solid-waste treatment equipment.

"China hopes one day it can have an environmental industry to rival that in developed countries," said Lou Shangyou, environmental expert with the Machine Industry Environmental Protection Institute which is under the Machine-building and Electronics Ministry.

China is not only targeting the vast domestic market, but also the international market, even though current exports are negligible.

Although China now has over 1,800 factories producing environmental-protection equipment, 80 percent of them are small-scale township enterprises.

Only 10 percent of the environmental-protection equipment used in China is up to date, while most lags behind world standards.

As a result, China every year has to spend a large amount of foreign exchange to import advanced environmental-protection equipment from Japan, Austria, Denmark, Britain and the United States, Lou said.

Large-scale waste water treating factories imported from Japan and Britain have been built in Shenzhen and Beijing, according to Lou.

Lou stressed that the real take-off of the industry relies on increased government purchases and an upgraded industry.

During the 1991-95 period, China, despite its tight budget, plans to spend 80 billion yuan (\$14 billion) on environmental protection, nearly double the amount for the previous five-year period.

Such big money is expected to clean up an environment devastated by China's rapid economic development over the past decade.

China's input on environmental protection, about 0.7 percent of its budget, is huge, Lou said.

At present, the environment is still under great pressure posed by the huge population of 1.1 billion and the current rapid pace of industrialization.

However, being aware of the importance of environmental protection, the Chinese Government has poured much attention and money in this field, he said.

National Panda Preservation Project Initiated

OW2112103892 Beijing XINHUA in English 0845 GMT 21 Dec 92

[Text] Beijing, December 21 (XINHUA)—A huge project designed to provide more protection and help for China's most prized wild animal, the giant panda, started recently, a wildlife protection official said here today.

Speaking at a press conference jointly held by the Ministry of Forestry and the World Wildlife Fund for Nature (WWF), Shen Maocheng, vice-minister of forestry, said the Chinese Government recently approved the "national conservation project for the giant panda and its habitat", which will last a decade and cost about 300 million yuan (52.6 million U.S. dollars).

The giant panda project includes setting up 14 nature reserves, covering a total area of 4,240 sq. km, in the provinces of Sichuan, Shaanxi and Gansu, the only natural home to the rare wild animal in the world.

Shen said the leading group in charge of the project plans to collect money by exhibiting the giant panda and issuing bonds at home and abroad.

"The giant panda is not only a national treasure for China, but also one of nature's gifts bequeathed to all of mankind," said the vice-minister.

Seventeen wooded corridors will be preserved to link several isolated giant panda habitats so as to enable the rare animals to travel between them in safety and give the animals more chances to breed.

Fan Zhiyong, a wildlife expert of the project under the Ministry of Forestry, said, "about 18 enterprises specializing in timber production in the nature reserves and about 5,000 local farmers will have to be resettled."

He said the relocation is a big problem for them, because it requires much more money than the government can provide.

The planned nature reserves will bring the total number of giant panda reserves to 27. Fan said the Ministry of Forestry plans to establish 30 panda monitoring stations in the remaining giant panda habitats when the ministry has enough money.

Once plans have been implemented, not only will the habitats be safe for the giant panda, but they also will give similar aid to other rare animals in the same regions, such as the golden monkey, the red panda and the south China tiger, which are also rare and endangered animals in China. Stuart Parkins, WWF China program coordinator, said at the press conference that the project is of both national and global significance for ecological, environmental protection.

Chinese Premier Li Peng wrote an inscription for the project: "May the Rare Animal Giant Panda Coexist With Mankind."

The leading group for the project set up recently is headed by Minister of Forestry Gao Dezhan.

The project was based on a five-year survey of wild giant pandas in China, which was jointly conducted by the ministry of forestry and the world wildlife fund for nature in the mid-1980s.

According to the survey, the area inhabited by the giant panda was reduced by half during the 15 years since 1974, when bamboo shoots, their main food source, flowered, withered and died in the area that had long been their natural habitat.

The survey, which attributed the reduction mainly to the development of forest land and other human activities, concluded that the situation of the great panda, which numbers about 1,000, is critical.

Illegal Tree Felling, Animal Poaching on Rise

OW2012120492 Beijing XINHUA Domestic Service in Chinese 0440 GMT 19 Dec 92

[Text] Beijing, 19 December (XINHUA)—Since the beginning of this year, unauthorized felling of trees and illegal poaching of animals has been on the rise in quite a few places. In view of this, the State Council General Office transmitted a report prepared by the Forestry Ministry concerning the current situation of unauthorized tree-felling and illegal animal poaching, and the comprehensive measures to curb the situation; and it has called on localities and departments to implement the measures.

The Forestry Ministry's report says: Since the beginning of this year, instances of forest destruction have reemerged in large numbers in many localities; incidents of people assembling to plunder timber and engage in armed clashes have increased markedly; illegal transportation and sale of timber has intensified; and poaching and smuggling of rare and endangered wild animals has occurred despite repeated prohibition. According to statistics, in the first six months of this year, the forestry security departments nationwide handled a total of 52,315 cases, and investigated and punished 81,899 lawbreakers, up 20 percent and 7.4 percent respectively over the same period last year; economic losses caused by these cases amounted to 45,480,000 yuan, 57.2 percent more than the same period last year; and the area of damaged forests increased by 140.3 percent over the corresponding period last year. Because of poaching, a large number of state-protected wild animals have perished since the beginning of this year.

The Forestry Ministry has demanded that all localities further understand the importance of, and strengthen the protection and management of forest resources, stepping up publicity and education to enhance the whole society's awareness of forest protection; and mobilizing and organizing the masses to jointly ensure a good job in the protection and management of forest resources. It is imperative to earnestly implement the laws, regulations, and other relevant provisions on the protection and management of forest resources, and to persist in managing forests according to the law. It is necessary to further reinforce the functions of competent forestry authorities for managing forest resources and exercising forestry administration, to stabilize grass-roots forest resources management system, to attach importance to and strengthen the construction of forest work stations, and to reinforce their functions to manage resources. It is necessary to improve the quality of forestry security personnel, and bring into full play the important role of forestry security departments in safeguarding forest resources and maintaining public order in forested areas. It is also necessary to take effective measures to severely crack down on criminal activities of destroying forest resources in violation of the law. At present, efforts should be concentrated on launching drives in specific areas where unauthorized tree-felling and illegal animal poaching are rampant. Efforts should be made to crack down on criminals and gangs who have felled trees, looted timber, and caused serious damage; who have illegally poached and smuggled state-protected wild animals and their products; and who incited the masses to plunder and destroy forests, and to injure forest guards.

Minister Notes Increase in Forestry Resources

OW0401143793 Beijing XINHUA in English 1423 GMT 4 Jan 93

[Text] Beijing, January 4 (XINHUA)—China's forestry resources increased markedly last year, according to a senior forestry official.

Gao Dezhan, minister of forestry, told XINHUA that forests now cover 13.63 percent of the country—131 million hectares of trees—with 10.9 billion cubic meters of storage timber.

Reforms in the forestry industry and strict checking had resulted in the increase, the minister said. In addition the quality of forests is also improved.

The four national key shelterbelt projects, including the three north forest and the shelterbelts in the upper and middle reaches of the Yangtze River, also made marked progress.

Statistics from the ministry show that about 4.54 million hectares of forests planted each year have reached the national standard. The number of planted trees cultivated to growth standards improved from 65.6 percent in 1988 to 82.6 percent last year.

Meanwhile industries depending on afforestation also developed rapidly last year. Total output value including lumber processing, paper-making, fruits and nuts, herbal medicine and spices, tourism and the taming and utilization of wild animals, hit 126.5 billion yuan.

State Imposes Controls on Waste Dumping at Sea

*OW1401000693 Beijing XINHUA in English
1443 GMT 13 Jan 93*

[Text] Beijing, January 13 (XINHUA)—China has imposed more strict controls on the dumping of wastes at sea in the past year, a Chinese official said today.

"Disposal of radioactive materials is banned in China and there has been no serious pollution on the sea caused by dumping waste," said Chen Bingxin, deputy-director of the National Bureau of Oceanography.

Speaking at a news conference, he said that China has designated 52 dumping grounds in its territorial waters.

"The Chinese Government totally bans dumping waste in international waters," Chen said.

According to Chen, the waste dumped at sea chiefly comprises silt dredged from waterways and a small amount of powdered coal from power stations.

Last year the National Bureau of Oceanography issued 330 licenses permitting the disposal of waste.

"Altogether, 49 million cubic meters of silt and more than 100,000 tons of powdered coal have been dumped at sea," Chen said.

Environmental quality around China's eight offshore petroleum and natural gas fields and 24 offshore exploration platforms has been kept clean, according to Chen.

"There has never been environmental problems such as oil spill," he said.

But the Chinese official admitted that the flow of sewage into the sea and the disposal of solid waste on the shore is threatening the country's marine environment.

Major Cities To Receive High-Quality Fuel Coal

*OW1401000793 Beijing XINHUA in English
1601 GMT 13 Jan 93*

[Text] Beijing, January 13 (XINHUA)—China will supply its major cities of Beijing, Shanghai and Tianjin with high-quality fuel coal to help reduce air pollution, it was announced here today.

A proposal to this effect was approved at the 24th meeting of the Environmental Protection Committee of the State Council.

According to the proposal made by the Ministry of Energy and the State Administration of Environmental Protection, Beijing and the two other cities are major political, economic and cultural centers of the country. With the deepening of reform and opening up in China and its application for hosting the 2000 Olympic Games, it is of greater significance to protect the environment in the three cities.

The high-quality coal containing less pollutants, is produced in the Shenfudongsheng coal mine in north China.

Speaking at the meeting, Song Jian, state councillor, stated that the country will focus on implementing the laws and strengthening the supervision of environmental protection.

He said effective measures will be taken to wipe out activities involving killing and eating wild animals and to put an end to various activities violating laws and regulations on protecting wildlife.

Today's meeting also discussed the further strengthening and implementation of laws on environmental protection and the crackdown on illegal activities.

The committee also set out as major tasks for 1993 the strengthening of the management of the environment and the improvement of the environmental protection system concerning economic and technological and policies.

AUSTRALIA

New Treaty Reduces Japanese Access to Tuna Grounds*BK2112072692 Melbourne Radio Australia in English
0500 GMT 21 Dec 92*

[Text] Japanese access to Australia's rich tuna fishing waters is to be reduced further. A new treaty signed in Melbourne today will see tighter controls on Japanese tuna boats and a cutback in areas of the Australian fishing zone available to them. Japan will also pay a fee to Australia of almost \$3.8 million in the next financial year for access, which the federal government says reflects the high value of tuna taken from Australian waters. The reduction should allow an expansion of the Australian tuna fishing fleet. Japan has also agreed to provide data on its high seas fishing operations to Australia to improve research on stocks.

Prime Minister Unveils Government Plan for Environment*BK2112071692 Melbourne Radio Australia in English
0500 GMT 21 Dec 92*

[Text] Australia's Prime Minister Paul Keating has unveiled a major statement on the environment, committing his government to spending \$150 million over the next four years. Mark Tamhane reports the major theme of the statement is a renewed effort to protect Australia's rivers.

[Begin Tamhane recording] The centerpiece of the statement is a commitment to clean up the Murray-Darling, Australia's largest river system, which has become increasingly polluted and choked with a toxic blue green algae. Nearly half the money will be spent on improving water catchments, treating sewerage, monitoring water quality, and protecting wild rivers.

On the international stage the government will ratify conventions on biodiversity and climate change, arising from this year's Earth Summit, while a cave system in South Australia and fossil site in Queensland will be nominated for the World Heritage listing.

The importation of high-level radioactive waste will be banned and new studies will examine the impact of tourism on the environment. Money will also be allocated to a number of other conservation and recycling initiatives.

The nation's leading environment group, the Australian Conservation Foundation, has welcomed the prime minister's initiative, but says the government must do more.
[End recording]

JAPAN

Government To Allow International Checks of Chemical Plants*OW1301123293 Tokyo KYODO in English 1210 GMT
13 Jan 93*

[Text] Tokyo, Jan. 13 (KYODO)—With its decision to sign a historic treaty to control chemical weapons, Japan will institute a new law that will allow international inspections of chemical factories, government sources said Wednesday.

The proposed law will also require chemical firms, including makers of agricultural chemicals and semiconductors, to submit regular reports to the government on chemicals in stock, the sources said.

Japan is to accede to the international convention banning the development, production, stockpiling and use of chemical weapons at the treaty's signing ceremony in Paris on Wednesday.

The sources said the government has launched studies on measures for Japan to cooperate in international inspections of chemical factories, including contribution of funds and personnel.

Japanese enterprises, however, have expressed concern over the possible leak of industrial property, including technologies and other secret data, resulting from the opening of their factories to international inspections.

The sources said the proposed law, to be enacted in time for the ratification of the treaty in 1995, also incorporates provisions designed to control chemical trade and exports of chemicals to nations involved in conflicts.

They said there are about 1,000 factories in Japan that are subject to international inspections.

Official Urges Government Review of Plutonium Shipments*OW2112130692 Tokyo NHK General Television
Network in Japanese 1000 GMT 21 Dec 92*

[From the "NHK News" program]

[Text] A top Foreign Ministry official has suggested that the government might possibly review the way plutonium is transported to Japan after the Akatsuki Maru, Japan's plutonium-carrying vessel, completes its voyage from France. The Akatsuki Maru is currently on its way to Japan with a cargo of plutonium.

The official noted that, although the Japanese Government has given adequate consideration to the issue of safety in the Akatsuki Maru's first mission, it has failed to win full support from those countries whose waters through which the Akatsuki Maru is sailing. The official said that the government may consider better transportation methods after drawing lessons from this experience.

TAIWAN

Observers To Attend Kenya Rhino Conservation Meeting

OW0901110293 Taipei CNA in English 0745 GMT
9 Jan 93

[Text] Taipei, Jan. 9 (CNA)—The Republic of China [ROC] will send delegates to an international rhino conservation conference to be held in Nairobi, Kenya in March, an official of the Council of Agriculture said Friday [8 January].

The ROC delegates, said the official, will attend the conference to be called by the United Nations environment programme in the name of TRAFFIC (trade record analysis of flora and fauna in commerce international) Taipei.

TRAFFIC Director Jorgen Thomsen suggested during his visit to Taipei last November that Taiwan send observers to the rhino conservation meeting in Nairobi and strengthen contacts with world wildlife protection officials and activists.

Taiwan will take the opportunity to salvage its "rhino horn trader and consumer" reputation by making known during the conference the ROC Government's position on the protection of endangered species and its continued efforts to crack down on wildlife trade, the official added.

Government Pushes Ahead With CFC Phaseout

OW1101093893 Taipei CNA in English 0807 GMT
11 Jan 93

[Text] Taipei, Jan. 11 (CNA)—The Government of the Republic of China [ROC], alarmed to a possible international boycott by the contracting parties of the Montreal Protocol, has committed itself to the gradual phaseout of chlorofluorocarbons (CFCs), an industrial official said over the weekend.

The government-financed Industrial Technology Research Institute (ITRI) will take the initiative this year by introducing CFC-free cleaning expertise to local electronics companies, major users of industrial CFCs, indicated Yen Ping-ho, section chief of the Industrial Development Bureau (IDB).

Yen pointed out that between NT\$1 billion [new Taiwan dollars] and NT\$1.2 billion worth of Taiwan-made electronic products will be barred this year from being shipped to the contracting parties of the protocol of which Taipei is not a signatory.

The protocol passed a resolution imposing a global ban on CFCs from 1996, claiming that the widespread use of CFCs has depleted the earth's ozone layer and allowed an increasing amount of ultraviolet radiation to penetrate into earth's atmosphere, a phenomenon doctors warn could cause increased rates of skin cancer.

Noted environmentalists and scholars will be invited here for speeches and seminars in the hope that the ROC's efforts in the control of CFCs will be known to the world, the official added.

Besides, he revealed, IDB with ITRI's cooperation is planning an international petrochemical show to impress the world with what the ROC is doing in the protection of the environment while at the same time promoting industrial development.

Meanwhile, the government is seeking to minimize the possible negative impact on the economy arising from the boycott, Yen indicated. For instance, Lin Yi-fu, deputy director-general of the Board of Foreign Trade, is in Washington to negotiate with the United States on a CFC phaseout agreement.

Taiwan Removed From U.S. Driftnet List

OW1301113193 Taipei CNA in English 0751 GMT
13 Jan 93

[Text] Taipei, Jan. 13 (CNA)—The United States from the beginning of this year has formally excluded the Republic of China [ROC] from its list of countries using driftnets to fish in international waters, the Council of Agriculture said Tuesday [12 Jan].

The council, however, called on the local fishing industry to strictly follow the ban on driftnet fishing so as not to harm the overall interests of the industry and the nation's economic and trade interests.

The council said that the U.S. began to ban imports of driftnet fishing products in July 1991.

It required that original product certificates should be attached for imports of squid, tuna, shark and swordfish, and their processed products from the countries listed as driftnet-using countries.

But the US recently loosened its ban on the imports since many countries have abandoned driftnet fishing.

Still, the US has not lifted its threat of a trade embargo against driftnet fishing countries, the council therefore asked the local fishing industry to observe the ban on driftnet fishing so as to protect the greater interests of the industry as a whole.

THAILAND

Survey Reveals Destruction of Northeast Region Forest Cover

BK0501031093 Bangkok THE NATION in English
5 Jan 93 p B7

[Excerpts] The application of Geographic Information Systems (GIS) methods to the land profile (topology) of the Northeastern region of Thailand has shown that the forest cover there has been reduced from 50 percent to 13 percent in just 15 years.

It has also suggested that the rain-dependent farmer should focus on the second phase of the monsoon, which follows a long rainless period in late June and early July, as this holds better prospects for agriculture.

According to Dr Charat Mongkonsawat, who directs the Remote Sensing Soil and Water Management cell at Khon Kaen University, "the situation is serious."

Charat said GIS investigations have revealed severe soil erosion, soil fertility loss, salinity, and deforestation in the region.

"We have developed the most extensive database on this region and while this is an important achievement, we are also worried about the many problems emerging," he said. [passage omitted]

One single geographic area is looked at for different profiles, including altitude, annual rainfall data, land use, cropping pattern, and so on. An overlay of, for instance, Bangkok's road maps and diurnal traffic patterns, could give us, with GIS, a way to get across from place A to place B in the shortest possible time, an extremely handy thing for residents of the city.

The GIS investigations in Khon Kaen have helped in the drafting of conservation and regeneration measures which could restore the Korat Plateau region to reasonable health.

The ongoing remote sensing programme is a joint effort of the Canadian International Development Agency (CIDA), McGill University, Toronto, and Khon Kaen University. [passage omitted]

The research spans several aspects: the salinity map of the Korat plateau and the Nakhon Sawan basin, classification of the land ecological system, database on forests and water resources, and mapping the land use pattern, among them. [passage omitted]

Charat said profiles for nine provinces have been completed so far, with help from officials of the Revenue Survey Department and the Natural Resources Council

of Thailand. "And we can say we have established the largest database in the Northeast," Charat added, not without some pride.

Referring to the agricultural practices of the farmers in the region, Charat said the normal trend is for them to depend on the second half of the monsoon season, lasting from mid-July to mid-October.

"This homogeneous pattern (as seen from GIS overlays) suggests that the farmer should transplant his rice in the second phase. Secondly, we see that for a long time there has been monocultural cropping. The farmers should introduce intercropping with legumes like peanuts and mung bean," he said.

The GIS has provided yet another overview of the terrain and the cropping profile of the area. In the gently undulating lower part rice can be grown with best results. At the upper part sloping towards the Phu Phan Ranges cassava and sugarcane have good prospect. Cassava can actually be grown in any season.

Charat said that in the long term, the Northeast would benefit from and depend on cassava and sugarcane. If irrigation is provided during the dry season, vegetables and legumes can be grown. But with salinity being high, the government should be careful when choosing the location of water reservoirs.

The forest cover, apart from having been reduced greatly, is now comprised mainly of secondary natural forest cover. This is the crop of small trees which gain light and soil nutrients with the destruction of the larger predominant species. There are also trees planted by several concerned agencies. Charat recognized them as being principally of the dipterocarp species.

The remote sensing maps were obtained by Landsat, MOSI, and ERSI satellites which have cameras capable of penetrating clouds and distinguishing roughness of edges. CIDA has provided funding for several projects. In due time, all the provinces of the Northeast will be mapped and available for GIS-based planning and policy making work.

BULGARIA

New Environment Minister Assesses Policy Problems

AU1201103493 Sofia BTA in English 1901 GMT
11 Jan 93

[Text] Sofia, January 11 (BTA)—The basic problems of Bulgaria's environmental policy result from the legislation and the lack of an overall concept of economic regulators, the newly elected minister of the environment, Mr. Valentin Bosevski believes. He discussed the condition of the Bulgarian environment at the cabinet's meeting today. There have been several customs concessions to the import of environmental equipment so far, Mr. Bosevski stressed. National and municipal environmental protection funds are expected to be established shortly, he said.

According to the report presented by Environment Minister Valentin Bosevski before the cabinet today, the elaboration of Bulgaria's environmental strategy till the year 2,000 had been completed back in late 1991. The World Bank then gave a very high praise to this development.

The new leadership of the Ministry of the Environment intends to set up a National Environmental Protection Agency, national radioactive protection system and a special emergency team systems which should react in cases of environmental incidents.

Bulgaria has signed 19 international conventions and agreements on environmental protection so far, Mr. Bosevski said.

The Ministry of the Environment will move six bills and 12 statutory instruments before the government by the end of the first quarter of 1993.

Environment Minister Bosevski expressed his dissatisfaction with the non-observance of the Bulgarian-Romanian Convention on Environmental Protection in the area of the common border. He expects this problem to be settled through diplomatic channels as early as possible.

CZECH REPUBLIC

Klaus Confirms Temelin Nuclear Plant Near Border Will Be Completed

LD0701223193 Prague Stanice Praha Radio Network
in Czech 2130 GMT 7 Jan 93

[Text] During his talks with Austrian Vice Chancellor Erhard Busek in Salzburg today, Czech Premier Vaclav Klaus confirmed that the nuclear power station at Temelin will be completed. Klaus said in a subsequent briefing for journalists that nuclear reactors at Temelin and Dukovany are safer than those of similar type in the West.

Vice Chancellor Busek said Premier Klaus explained his government's stance by saying that lignite-based power plants ranked among the worst environment-polluting plants.

At the start of his three-day visit to Austria, Czech Premier also held talks with Governor Hans Katschthaler of Salzburg on ecology and tourism.

In the evening Vaclav Klaus gave a speech on the occasion of the Three Kings Day annual meeting of the Austrian People's Party entitled "The Future of Europe seen through Czech Eyes."

Prime Minister Comments on Future of Europe, Environment

AU1301214893 Prague MLADA FRONTA DNES
in Czech 9 Jan 93 p 8

[Unattributed report: "Klaus Is Skeptical Regarding Maastricht"]

[Text] Vienna—The Czech Republic, Poland, Hungary, and Slovenia [as published] could significantly contribute to the "healing of the open wound in the middle of Europe," Czech Prime Minister Vaclav Klaus declared in the framework of his speech on the future of Europe delivered in Salzburg on Thursday [7 January]. These countries could form an "efficient filter" of the deleterious influence from Eastern and Southeastern Europe. This, however, requires assistance from the West.

According to him, the future of Europe must be considered separately from the future of European institutions. Klaus described himself as a "Euroskeptic" regarding certain Maastricht agreements. Moreover, he warned against an overly rapid entry in Europe, and pointed out the necessity of the existence of borders.

On environmental issues, Vaclav Klaus said that the economic transformation must go hand in hand with the recovery of the environment, and that the greatest danger to the environment does not come from the nuclear power plants but rather from the lignite thermal ones.

HUNGARY

Microbiological Damage in Danube Basin Studied

93CH0233B Budapest KOZTARSASAG in Hungarian
11 Dec 92 pp 70-71

[Unattributed report including interview with Professor Istvan Szabo, chairman of the microbiology department of the Eotvos Lorand University of Sciences; place and date not given: "Environmental Protection: Planed Off Microbes in the Danube Basin"]

[Text] Water supplies could become polluted as a result of damage suffered by the microbiological filter layer of

the basin, not only in the vicinity of shore-filtered wells along the two sides of the Danube, but also several hundreds of kilometers away, spoiling the water quality for hundreds of years, according to the microbiologist who appeared at a new debate about the dam, which was organized by the Association of Hungarian Engineers and Architects.

Many arguments and counterarguments have been made relative to the Danube dam. Anyone who has followed the swell of information provided during the past few weeks, months, and years could almost regard himself as an expert in energy production, navigation, architecture, the ecology, and law. The truth may soon be figured out from the countless number of details published, and for once we will be able to obtain a credible picture, including all the details on how the case of the dam has deteriorated for good, and who has done what and when in this sad history that has been dragging on for more than a decade.

But all this information—also published by the press—also makes clear all the things we do not know about, the number of specialized examinations that have not been performed, and the number of specialized fields whose spokesmen have not only been disregarded, but were not even heard by the decisionmakers, and consequently, what threatens the gigantic interference with the natural order holds in addition to the “known” risks.

At an afternoon debate by the Hungarian faction of the World Federation of Hungarian Engineers and Architects convened to clarify disputed issues relative to the present situation of the Danube and the dam—a meeting that once again deteriorated into a verbal battle filled with emotions rather than with realistic arguments between engineers supporting and opposing (engineers representing various specialties) the dam—one specialist, who appeared as an invited guest, provided truly new information. (True, this person was not an engineer, but a biologist, or microbiologist, to be exact.)

Professor Istvan Szabo, head of the Microbiology Department of ELTE [Eotvos Lorand University of Sciences]:

[Szabo] At the support layer of every live body of water there evolves a natural microbiological filtering layer that prevents gases that erupt from the depth of the earth, and which are harmful to life, from entering the water and then the atmosphere, and, in the reverse process, prevents materials that could upset the balance from entering layers of soil and deep, underground waters through the filtering layer. The approximate thickness of this microbiological filtering layer is that of the span of a hand, and is made up of masses of various types of microbes feeding on various things. The composition of the species of microbes changes according to the natural conditions. For example, in places where carbohydrates erupt from the depth of the earth, huge masses of bacteria capable of utilizing, decomposing, and degrading carbohydrates form this microbiological

filter. But other species, which constantly bond huge quantities of carbon monoxide, nitrogen monoxide, and nitrogen dioxide washed in from the air are also part of this live community; they prevent these gases from penetrating deeper underground layers.

Our water, and thus also the surface of the bottom sediment of the Danube, has a microbiological filtering layer that prevents macro and micro, organic and inorganic pollutants flowing in the waters from penetrating the basin and entering ground water. This live, microbiological community regenerates in close to one year, if damaged for some reason. When the filtering layer is damaged in the course of dredging operations one often finds immediate pollutant penetration of ground water bodies and the rapid deterioration of water quality in wells supplied through shoreline filtering. The fact that on a very long—100 kilometer—stretch of the Danube, beginning in Austria, continuing along the Hungarian-Slovak border, and after Bos [Gabcikovo], constant cuts into the basin continuously destroy the bacteriological filtering layer that protected ground water on both the right and the left side of the Danube before, presents an extremely grave problem. This situation has catalyzed a process that cannot regenerate itself in the course of a year. The filtering layer is destroyed, because water containing little sediment, rushing at a constant speed, continuously planes off the filtering layer. Unfortunately, this layer is not going to regenerate itself for many long years.

[KOZTARSASAG] “What does the process, which occurs in every basin during dredging operations, has to do with the dam?” we asked Professor Szabo during debate, because it appeared from subsequent questions that not everyone understood the argument presented by the microbiologist.

[Szabo] If water let in behind the dam continues to flow rapidly and with great force, then crashes into the basin, and planes off the surface of the basin, then this layer is going to disappear, the bottom of the basin below it is going to be open and all the pollutants are going to be enter the ground water without impediment. The aforementioned biological filtering layer recovers from the consequences of dredging in one year, in other words, a year after the interference no pollution can be found in ground waters. The dam, on the other hand, represents a long-term change, and we know that the pollution in the Danube already presents a rather great problem.

This is the beginning of a process that causes the slow, continuous pollution of the waters and ground waters of the Vienna basin, the Hansag, the Szigetkoz, and south Slovakia. This problem is of a kind that its significance might be recognized only 200 years hence. For example, our successors may find around the year 2200 that pollutants that entered the lower ground layers of the Northern Trans-Danubian region in the 1990's are still there.

The damage caused to this filtering layer is not related to slower water flow, because we also find this biological filtering layer at the bottom of still-water basins. The only role played by the slower water flow after damming that cannot be neglected is that the water deposits a huge mass of easily fermenting, rotting organic material, and that material destroys the damaged filtering layer even more. In addition, some toxic materials are also produced in the process of rotting, and these, too, seep down into the ground water.

[KOZTARSASAG] Why haven't we heard this argument before, even though much has been said about ecological and natural biological issues in the debate over the dam?

[Szabo] The issue of potable water reserves becoming polluted and the threat presented to shore-filtered wells has always been a central issue regarding the dam. Less has been said, however, about further reaching, long-term effects. This might have occurred because among the experts, and among environmentalists who participated in the debates, there were no microbiologists specializing in saprophyte sciences (experts dealing with plants nourished by lifeless, inorganic materials—the editor). Medical microbiologists and hygienists on the other hand are not well informed in this field.

Slovaks Offer To Build Smaller Dams on Danube

LD0601095093 Budapest Kossuth Radio Network
in Hungarian 0800 GMT 6 Jan 93

[Text] Slovakia wants to build new, smaller dams on the Danube in order to raise the water level that has fallen as a result of the diversion and thus to reduce the environmental damage. Julius Binder, head of the investment enterprise, told Hungarian Radio that they would fit turbines to the so-called overflow weirs and in five years' time Hungary would also get some of the electricity produced.

According to Gyorgy Tatar, the Hungarian Government's commissioner for the water barrage, the Slovak offer is unacceptable because it runs counter to the London Protocol which prescribed a return of 95 percent of the water amount and did not mention the construction of possible new electricity producing installations.

As to Bratislava's other offer, namely that it would be willing to build a dam on the Old Danube for environmental purposes, the government commissioner said this would have to be discussed by experts.

POLAND

Conference Examines State of Environmental Protection

LD1101175093 Warsaw PAP in English 1737 GMT
11 Jan 93

[Text] Lublin, Jan. 11—Wojciech Jaworski of the Ministry of Environmental Protection, Natural Resources

and Forestry on Monday said that his ministry plans to earmark considerable sum of money to limit industrial emission of sulphur dioxide.

Addressing a conference on the protection of the natural environment, Jaworski said that the ministry plans to spend as much as 12 trillion zlotys (790 million U.S. dollars) for the desulphurization of coal during the next four years.

Professor Lucjan Pawlowski speaking to participants in the conference that Poland is able to significantly contribute to solving global environment protection problems, including the greenhouse effect.

However, Pawlowski stressed that Poland should focus on its own problems in this respect "as we are among the inglorious group of European states suffering from severe environment pollution."

Organizers expressed hope that the conference will produce a report on the state of the natural environment protection in Poland.

ROMANIA

Iliescu Views Economic, Social Problems

AU1301152993 Bucharest DIMINEATA in Romanian
31 Dec 92 pp 1, 3

[President Ion Iliescu's speech during his meeting with the heads of diplomatic missions accredited to Bucharest, at Cotroceni Palace on 29 December 1993: "The Year 1993 Should Mark Important Steps on the Road to Consolidating Peace and Achieving a Better Climate for Developing International Cooperation"]

[Text] First of all, at the end of this year, I would like to greet you warmly as representatives of your countries in Bucharest. Thank you for your heartfelt words and good wishes extended to me. We would like you to be our heralds to the leaderships of your countries and for you to take with you the feelings of friendship that we nurture for the countries and peoples that you represent, as well as our sincere wishes to see the consolidation and development of our traditional relations with most of your countries and of the new relations that we have established recently with a large number of other countries. Many of you have lived among us in the past three years since the 1989 December revolution. The year 1992 that we conclude now, as you can witness, has been a significant year for the political development of Romanian society. We have concluded a cycle of political development, a stage that followed the thorough transformation of the Romanian society's physiognomy, a transformation brought about by the explosion of the people's revolution of December 1989. The 1992 September-October elections concluded this cycle of setting the state institutions on a new, democratic foundation in accordance with the new constitution that was worked out in that period by the country's parliament, elected in

May 1990, a constitution that is based on democratic, multi-party principles and was adopted by a national referendum. The new state institutions have been consolidated at a central level on the basis of this constitution. After the 1992 February elections, the local institutions and the local administration have conferred a new structure to the Romanian rule-of-law state. Thus, we can consider the political development of Romanian society in these past three years as a thorough development, that marked an important step forward toward the establishment of democratic life in our society. Certainly, we are confronted with difficult economic and social problems. Finding solutions to these problems is the major mission of the new government—approved by the new parliament—that has started its activity in a difficult period, the winter period, and the period of preparations for 1993. There are some people who expect the new government to have fallen by the spring. We wish to hope—and want this hope to be confirmed—that the government will show the necessary ability to mobilize the creative forces of our nation to stop the process of economic decline in the productive area first and foremost, so that the year 1993 will be able to mark, on the one hand, normalization of economic life, and on the other hand, the beginning of the recovery of our national economy on a new basis. Likewise, we hope that the process of economic reform and of transition to the market economy will take a more solid and concrete shape in the legal and constitutional areas, as well as in the area of building mechanisms that are specific to a modern market economy, thus facilitating our integration into the international economic development process.

From this point of view, in the area of foreign policy, economic policy, and other relations, we are focusing on integration into the general European process, taking into account the important processes that have taken place in the life of our continent. We are striving for the elimination of all barriers of a military nature which used to divide out continent into two parts. We wish to take an active part in the process of putting general European relations on a new basis. From this point of view, the year 1992 has marked a few steps forward concerning our integration in the European political institutions, in the Council of Europe, in our relations with the NATO, with Western Europe, and our association to the Common Market and with the European Free Trade Association, as well as concerning our bilateral relations with the European countries in general. We are particularly interested in improving our relations with our neighbors, with whom we are traveling together along the road of complicated processes of transition from totalitarianism to democracy and from a centralized to a market economy. We are all facing great difficulties in this transition process. We believe that together, within a framework of understanding and cooperation, we will be able to overcome these difficulties more successfully. Therefore, as I have often mentioned, we are very much interested in establishing relations of good understanding and of cooperation with

all our neighboring countries and in developing traditional relations. We are particularly concerned about the conflict spots around us, particularly in Yugoslavia, a neighboring and friendly country, to which we are bound by old traditional and historical relations. We are concerned about the difficulties and tension in that country. We believe that only a political solution can settle the internal conflict in Yugoslavia and stop the expansion of those conflicts. From this point of view, we want to be a factor of stability and active in supporting the search for adequate solutions to alleviate and eliminate the source of conflict, and we are open for cooperation with all factors engaged in finding solutions to the Yugoslav conflict. Likewise, we are interested in making our contribution to easing other such spots of tension around us.

Certainly, our interest does not stop at relations with European countries. We are actively participating in initiatives regarding the expansion of our relations with the countries in the Black Sea region and we want to expand relations in the area of the Danube basin. We have pursued the development of relations with powerful states of the world: the United States, Japan, China, and Latin American countries, and with Asian and African countries, too. We wish to expand our multi-faceted relations with all the countries of the world. We are paying particular attention to our presence in the international bodies and in the United Nations, which, we believe, is being called upon to play an increasingly active role in solving difficult situations, in appeasing conflicting elements in international relations, and in being a factor of peace and an active factor in developing multi-faceted international relations. We had the opportunity of participating in the Rio de Janeiro conference, a meeting that was one of the central political moments of the year 1992, devoted to the problems of economic development, ecological balance, and environmental factors. One of the major problems that is confronting and that will continue to confront our civilization was also mentioned on that occasion, namely the discrepancy between rich and poor countries, a discrepancy that is continuously increasing. The three decades dedicated by the United Nations to development are meant to reduce the increasing discrepancy between rich and poor countries and between North and South. Maybe this represents one of the major problems of our civilization at the end of this century, and the beginning of the next century. This is one of the major political problems facing mankind, facing all the countries of the world, a problem in which cooperation should be an active factor of support of those who are fighting great economic and social difficulties. Unfortunately our countries in Eastern Europe, going through this process of decline in material production and in the quality of social life, is getting closer to that part of the world that is facing difficulties, the poorly developed world rather than the developed world. We hope that through the efforts of each of us and through the efforts of our peoples we will overcome this moment, this stage in our evolution, and will become dynamic and active factors in the process of

general economic development and in lessening the discrepancies between the rich and the poor world.

With these few ideas, I would like to wish you all a good year. Let us all wish that 1993 will mark important steps on the road to consolidate world peace and achieve a better climate for developing international cooperation. I wish you and your families good health and I would like to ask you to pass on our best wishes to the leaderships of the countries that you represent and to your peoples in the coming year. Happy New Year!

YUGOSLAVIA

Montenegro Tailings Dump Poses Ecological Danger

93BA0407F Belgrade VREME in Serbo-Croatian
30 Nov 92 p 18

[Text] Even Mr. Hans Zimmermann, high official of the United Nations, could not conceal his horror during a recent visit to the tailings dump in Mojkovac: "How is it that this facility has not been marked with a symbol for dangerous waste on any map, and it is located in Montenegro, which has been proclaimed to be an environmentally safe state?!" A disaster had to be prevented, and so the public was informed about the true measure of the danger from the tailings dump of the Brskovo Lead and Zinc Mine, located in the center of Mojkovac. Nevertheless, now the entire world is involved in preventing a disaster.

Millions of Cubic Meters

Mr. Hans Zimmermann escorted the first air transport of steel cages needed to repair the dam of the tailings dump, which was recently damaged over a length of about 100 meters during the disastrous floods of the raging Tara River. The European Community has approved an interventionary loan of \$135,000, which is needed to repair the Mojkovac dam, and has for the moment cast in shadow the framework of the operation on the space of the former Yugoslavia, having now reached the front pages of the world media, where it is being described in strong terms. Assurances that the disaster will be prevented are arriving from Mojkovac, which is "occupied" by experts and foreign journalists. Probably inhabitants along the Drina, Sava, Danube, and Black Sea can breathe easy. In the Mojkovac tailings dump, there are about 3.5 million cubic meters of material dangerous to the entire animal and plant kingdom downstream. Meanwhile, can it be stated with certainty that a part of the tailings dump did not leak away into the swollen Tara?

The Ministry of the Environment of Montenegro is reporting every day that the water quality of the Tara is being monitored, but the announcement (on Thursday,

26 November) that the republic weather bureau is analyzing the water every day evoked a laugh from the experts, for the simple reason that that bureau does not have the equipment and experts to detect heavy metals in water.

The Devices Are Not Working

The battle for the Tara can undoubtedly be won, but this does not mean that the war will also be won, the experts say, until the tailings dump built 20 years ago right beside the Tara is removed once and for all. That job exceeds the capabilities of Montenegro and the remainder of Yugoslavia, and, it is quite certain, the world community will become involved in that, and actually it is already doing it. The fact that the tailings dump is dangerous is no secret at all to experts, nor indeed to diligent readers of VREME, because we have already devoted several articles to the environmental time bombs in Montenegro, especially in our 100th issue in connection with celebration of the anniversary of Montenegro being proclaimed an environmentally safe state. Back in 1990, a study was done on the quality of life of Mojkovac which cited the Brskovo Mine and its tailings dump. It was reported at that time that the "mine had a device for treating recycled water, but it mainly was not in operation."

Boron oil and sodium cyanide are used for separation of the ore by flotation, and hazardous substances drained into the tailings dump, often building still more hazardous compounds: mercury, arsenic, cadmium, lead, zinc, iron, manganese, various cyanides, sulfides, and so on. The tailings dump was not maintained according to regulation, it was not constantly covered with water which had a pH factor of 10 that would prevent hazardous substances from evaporating or being carried away by the wind.

A rapid rise of malignant growths of the respiratory organs of human beings has therefore already been observed, and hazardous particles have also been found in the flesh of livestock and agricultural products, and so it is quite certain that they have also ended up in the water of the Tara, although there is constant reference to the quality of its water being in the top category. Everything, however, has been kept silent, and it is certain that it would not have been known even now had it not been for the disastrous flood. It seems that was a misfortune for the Montenegrin government, which in the election campaign has not been boasting about proclamation of Montenegro as an environmentally safe state. Now, that is, there has been an estimate that up to the year 2000 one out of every three inhabitants of Mojkovac will suffer from one of the 180 diseases that belong to the group of malignant illnesses. That estimate has been known about for years, but a persistent silence has been maintained concerning that danger, and the government has done nothing toward additional security of the dam of the tailings dump against the kind of bad weather that has occurred recently.

BRAZIL**Project To Stem Amazon Deforestation Launched**

93SM0099Z Rio de Janeiro O GLOBO in Portuguese
28 Nov 92 p 23

[Article by Eduardo Trece: "Amazon Region Gets Sustained Development Project"]

[Text] Brasilia—Last week the Amazon Region gained one more project aimed at reducing deforestation and environmental deterioration. The site chosen is the municipality of Juruena in Mato Grosso, and the first phase of the project should show results within three years. The Brazilian Institute for Environmental Research and Studies (Pro-Natura) has launched the Juruena Project in order to create choices for utilization of the tropical forest based on sustained development.

Pro-Natura intends to persuade settlers to stop clearing land by burning and to show that the tropical forest can be preserved even when subject to economic exploitation. Juruena has 5,000 inhabitants, and its economy is based on logging. The project is being financed by the British laboratory ICI (Imperial Chemical Industries).

"We want to prove that it is possible to adopt a new system of settlement for the Amazon Region without destroying biodiversity. It will be a program for increasing the awareness of the settlers, and it has financing for 20 years," said the president of Pro-Natura, Marcelo Carvalho de Andrade.

The Juruena Project will use a 100-hectare area for studying trees native to the Amazon Region. About 50 hectares will be set aside for the Experimental Research Center, which will conduct studies for increasing the productivity of the trees. The rest of the area will be turned into a model plantation.

"Pro-Natura intends to teach the settlers to adopt management and cultivation methods that do not harm the forest," said Yucatan Teixeira da Silva, the project's technical manager.

The Juruena Project may come to influence an area of as much as 600,000 hectares in the municipalities of Juruena and Cotriguacu in northern Mato Grosso. Only 4 percent of the territory of that region has been affected by burned-over land or turned into pasture. Over the next few years, Pro-Natura intends to buy a 5,000-hectare area on which to establish a botanical garden.

Juruena was chosen because of the great diversity of species, the meager scientific knowledge of its ecosystems, the lack of government agencies for environmental conservation, strong economic pressure from farming and grazing interests, and the interest shown by local rural producers in new management methods. The project will be monitored by researchers from the Federal University of Mato Grosso and the National Institute for Amazon Region Research (INPA).

Farmers Support Forest Studies

Brasilia—The medium- and long-term results of the Juruena Project are being awaited with great hopes by the settlers. They already know that it will be three years before the community benefits from the results of the project, although the initial results of experiments with native trees in nurseries should be available within one year.

"It is important to begin a project like this to make people aware that clearing land by burning and removing timber from the forest indiscriminately will be bad for the municipality. The project is off to a good start," said farmer Jaco Baches.

Growing Cabbage Palm a Priority

The biggest challenge facing the Juruena Project will be to discover options for profitable crops. The Association of Amazon Region Businessmen and Juruena's municipal government support the step being taken by the Pro-Natura Institute in the hope of developing a management and production system that will stimulate the municipality's economy without harming the environment.

"Juruena has very great potential for growing fruit and perennial crops such as coffee, but it needs an agricultural industry. The project will provide the settlers with efficient methods for managing the tropical forest within just a few years. I hope that the agricultural industry will flourish as a result of the new methods that will be studied," said Juruena's secretary of agriculture, Luiz Mackawa.

Juruena, which was carved out of the municipality of Ari-Puana in 1988, will be able to serve as a model for tropical forest management throughout the Amazon Region, with productivity gains in the various crops that will be studied in the area by this project.

"The project's first concern will be to ascertain the correct management method for growing cabbage palm and other native palms, which may be highly profitable," said Yucatan Teixeira.

All the profits from the project will be used to continue research, and the patents on any medicines that are discovered will be registered in the name of the municipality's union of rural producers, who will pay royalties to the Juruena Project.

Sao Paulo Governor Obtains Loans for Decontaminating River

PY1812234092 Rio de Janeiro Rede Globo Television
in Portuguese 2200 GMT 17 Dec 92

[Excerpts] Sao Paulo Governor Luiz Antonio Fleury today signed a loan contract in the United States. This loan will provide the money to decontaminate the Tiete River. The work will begin in early 1993.

[Begin recording] [reporter Antonio Carlos Ferreira from Sao Paulo] Sao Paulo deserves to have something better to look at. [video shows sluggishly moving waters carrying a lot of garbage] The city's main river is a veritable cesspool that contains no oxygen at all. It is a dead river. After receiving waste from 1,200 factories, its waters have become a thick soup of chemical waste and garbage. The first stage of the plan to save the river will cost \$900 million.

Today Sao Paulo Governor Luiz Antonio Fleury signed in Washington a contract with the Inter-American Development Bank that will put up half of the money.

[Fleury] This project will change the landscape; it will change the life of the citizens and the city of Sao Paulo and the metropolitan region. [passage omitted] [end recording]

Governor Fleury also went to the World Bank headquarters, where he signed another contract for a \$119 million loan that will be used to decontaminate the Guara Piranga reservoir.

COLOMBIA

Opium Poppy Cultivation Accelerates Deforestation

93WT0049A Santa Fe de Bogota EL TIEMPO
in Spanish 17 Dec 92 p 11A

[Article by Miller Rubio Orjuela: "Preliminary Examination of Opium Production in Colombia in 1992: 37,500 Ha of Forest Cut Down"]

[Text] A preliminary evaluation by the Antinarcotics Police, the Office of the National Security Counselor, and the Narcotics Council has concluded that narcotics traffickers are wiping out the forest reserves of the country, and farmers are resuming their planting activity.

San Vicente del Caguan—By the year 2000 Colombia will have lost about one-third of the native forests remaining to it, if organizations involved in the cultivation and sale of opium poppy sap continue their massive destruction of native species of trees.

This dramatic warning was made on 16 December after an antinarcotics operation was carried out on the Circasia Trail, in rugged country in the mountains of San Vicente Del Caguan (Department of Caqueta), in the course of which four hectares of land were sprayed with herbicides.

The police operation, in which two turbo thrust aircraft and about 200 men from the Antinarcotics Police took part, came at the conclusion of efforts coordinated by the National Drug Council and the Office of the National Security Counselor to halt the spread of opium poppy cultivation.

In this area, which is the center of activity of Front 23 of the FARC [Revolutionary Armed Forces of Colombia, a rebel group], 1,600 ha of native forest were found to have been cut down.

Calculations made indicate that 37,500 ha of nogales [walnut trees], cedros [cedars], caobas [mahogany trees], higuas [fig trees], encenillos [kindling wood trees], helechos [ferns], and palmas del Quindio [palm trees indigenous to Colombia] were destroyed in 1992 by farmers growing opium poppies.

In dealing with this terrible reality the organizations charged with the fight against those growing the "accursed flower" succeeded in destroying 12,513 ha of opium poppies.

Despite that achievement analyses made by the Antinarcotics Police indicate that farmers return again and again to sow opium poppies, in a phenomenon called a relapse into criminal activity.

According to the authorities, the farmers who have lost their poppy crops are put under pressure by the guerrillas, who demand the payment of large amounts of money.

According to a study by the Police Antinarcotics Directorate, made public on 16 December after the operation in San Vicente del Caguan, the price of opium poppy sap is declining as a result of police operations against the opium producing centers in the Departments of Tolima, Cauca, Huila, and Caqueta.

The report stated: "The farmers are selling opium poppy sap at the price which the intermediaries pay them...At present those who buy this commodity and those who produce it do so because they have the means of processing it into morphine and transporting it to such countries as the former USSR, Europe, and the United States."

Officer Wounded in FARC Attack

A pilot from the Antinarcotics Police Air Service was wounded on 16 December during an operation against narcotics guerrilla groups operating in the San Vicente Del Caguan (Department of Caqueta) area.

Police spokespersons indicated that while work to eradicate a field of opium poppies was going on, an officer named Smith was wounded, but Police Lt. Jorge Gomez Duque, son of Gen. Miguel Antonio Gomez Padilla, the director of Police, was unhurt.

The information available indicated that when the officers were carrying on their work in connection with the antinarcotics effort, an unknown number of criminals from the FARC attacked the helicopter in which the two officers were traveling.

Barrier Across the Border

Even though the secret services have not succeeded in determining whether there is a heroin cartel, experts state that in 1992 Colombia became a country for the transit of the drug to the United States.

Nevertheless, the constant flow of "mules" [individual persons] carrying heroin (100 in 1992) provides evidence that the Colombian drug cartels, according to one report, "are consolidating a number of channels to become acquainted with the market and the characteristics of supply, demand, and competition. This situation has generated a moderate amount of production and exports." Gen. Rosso Jose Serrano pointed out that, "we are very much concerned about the increase in the number of 'mules' arrested by the authorities in France and England. However, we know that there are no large-scale shipments because only small amounts have been involved in the cases that we know of."

Nevertheless, Serrano stated that it is clear that contacts have been made with international trafficking organizations which control the movement of Asian heroin through Colombia to the United States.

This has been proved by seizures of heroin coming from the Middle East. An Antinarcotics Police report states: "The seizure of six kg of heroin in Bogota, which had come from Beirut, is particularly worthy of note."

Another Aspect

Another aspect of this situation was confirmed on 16 December by Ricardo Santamaria, presidential counselor for national security; Gabriel de Vega Pinzon, director of the National Council on Drugs; and General Serrano. It is reported that some farmers are obtaining loans from the Agrarian Fund to invest in growing opium poppies.

This was learned after a conversation between Ricardo Santamaria and a woman who confessed to having invested some of the 800,000 Colombian pesos which she obtained from a loan to purchase cattle.

The woman said: "I had not yet sold anything because when I planted the other crop, they were just about to begin spraying the herbicides. I applied for a loan of 800,000 pesos from the Agrarian Fund, half of which I invested in cattle and the other half in growing opium poppies.

"When I bought the land, opium poppies were planted in nearby fields. There were no poppies planted on my land. So I had not grown very much on that piece of ground. A man from Quebrado gave me the seeds.

"I still owe him for them, sir," the woman who owned the land said.

In 1993 the state will earmark 1.3 million pesos obtained from help from the DEA [U. S. Drug Enforcement

Administration] and other international organizations to deal with the problem of opium poppy cultivation in Colombia.

For the moment the officials who observed the conclusion of operations in 1992 agree in saying that the country "is winning the opium poppy battle."

MEXICO

Nahua Indians Succeed in Stopping Hydroelectric Project

93CA0040Z Mexico City EL FINANCIERO in Spanish
28 Oct 92 p 29

[Text] San Juan Tetelcingo, Guerrero, 26 Oct (NOTIMEX)—After two years of mobilizations the Council of Upper Balsas Nahua Pueblos (CPNAB) has gotten the governor of the state, Jose Francisco Ruiz Massieu, to cancel the hydroelectric project that would have affected 45,000 local residents; it has also obtained a commitment from the federal government.

Members of the 37 Indian pueblos that make up the CPNAB met here to hail the cancellation and celebrate the second anniversary of their group, which they formed to fight for a complete and definitive end to the San Juan Tetelcingo hydroelectric project on the Balsas River.

After receiving a letter in which the state governor announced the cancellation of the project, the council members had their doubts. However, after the march for Indian dignity and resistance on 12 October, they were received in Mexico City by President Carlos Salinas de Gortari, who voiced his support for them.

The text, dated 12 February of this year in Chilpancingo, Guerrero, says: "Pursuant to the meeting that we held this past Monday, 10 October, and to the official letter issued by the secretary general of government, Carlos Vega Memije, I confirm to you that the federal government has told the undersigned that the work on the hydroelectric project of the Federal Electricity Commission, known as 'San Juan Tetelcingo,' has been completely canceled."

At this weekend's celebration part of the Indian council cheerfully displayed the document with the two signatures, which represents the biggest accomplishment of an Indian people anywhere in the world. Others expressed mistrust, however, because the document does not bear the seal of the Presidency of the Republic and does not announce a definitive cancellation.

Nevertheless, as part of the presidential decision, last Friday members of the organization and representatives of the National Indian Institute (INI) and the Social Development Secretariat (Sedesol) met to hear proposals and make decisions on short-term, alternative development projects financed by Pronasol [National Solidarity Program].

They also agreed that the Upper Balsas pueblos would lodge their specific short-term demands for resources and then plan for medium- and long-range funding. Once the latter has been defined, they will set up a regional solidarity fund agreed upon in a general assembly.

For the time being they said that they were demanding: drinking water, electrification, and the building of roads, bridges, schools, and health care centers, the approximate cost of which is 4.6 billion pesos.

The alternative proposed by the CPNAB, aided by the Group of Environmental Studies (GEA), and headed by Alfonso Gonzalez, an architect who has studied social anthropology and is a rural forestry promoter, is a project for sustainable development run by the Indians themselves. This is consistent with the Mexican Government's stand in Rio de Janeiro, inasmuch as the rights of neither present nor future generations must be sacrificed.

The GEA has been working on this for a year and half now. Without a budget, however, it can at this time say only that during an initial stage of six to eight months it will need the support of 10 paid researchers, plus material support, and per diem expenses.

The INI has already accepted the proposal but needs to do short-term planning in order to gain support from Solidarity, while it moves ahead with plans for undertaking projects in the medium term. "There is no problem with time periods or six-year terms, because the needs remain and the mechanisms too," Gonzalez remarked.

A hydroelectric project was first planned here about 50 years ago. The Federal Electricity Commission did not take it up again until the 1980's, eventually securing a loan from the World Bank and starting construction in 1990, but without notifying the locals who would be affected.

They learned of the project, however, and blueprints in hand, began mobilizing to have it canceled. When the specialists on the commission were forced to acknowledge the project, they said that only 17,000 persons

would be affected. "But these are false data, because they come from a 40-year old malaria-eradication census."

PARAGUAY

Atomic Commission Denies Loss of Radioactive Needle

PY1812204092 Asuncion ABC COLOR in Spanish
17 Dec 92 p 5

[Text] In a report submitted to Congress on the alleged disappearance of a cesium-137 radioactive needle—imported from the Institute for Cancer Disease and Burn Injuries—the Paraguayan National Atomic Energy Commission [CNEAP] stated that "no needle has been lost."

The report maintains that the needle, which was reported missing by some local media and investigated by the Congressional Investigating Committee on Illegal Activities, "is in its original package at the safe shelter of the aforementioned hospital."

The report issued by the CNEAP further states that "the area where the alleged bunker was located was screened on 23 November and no radiation leak was detected."

With regard to reports purporting that radioactive toxic waste was found at Teniente Ochoa, in the Paraguayan Chaco region, the report says that screening tests were performed in the aforementioned place but "no radiation level exceeding the normal environmental values (background) was detected."

The report goes on to say that "likewise, samples were taken from the River Monte Lindo water and soil in order to be tested at CNEAP laboratories. The assay results revealed that the radiation levels were not above normal values either." A copy of this report was sent to Judge Angel Barchini.

The report adds that it is not within the CNEAP's competence to intervene in issues pertaining to toxic waste unrelated to radioactivity.

Notwithstanding this, another report drafted by a laboratory from Buenos Aires, Argentina, which the aforementioned committee made public yesterday, said traces of heavy metals were detected in the drums found at Teniente Ochoa.

BANGLADESH

Asian Development Bank Approves Loan To Check Industrial Pollution

BK0501131893 Dhaka Radio Bangladesh Network in Bengali 1230 GMT 5 Jan 93

[Text] The Asian Development Bank has approved a 600,000 dollar technical assistance for the management of industrial pollution control in Bangladesh. The grant, which will be provided from Japan's special fund, is divided in two parts. The first relates to the management of industrial environment and the second to the control of industrial pollution.

Protocol to ensure that the technology is transferred to the developing countries in a way that is acceptable to them.

He also said that the principle of liability of those nations who have been responsible for creating the problem in the first place has not been recognised. Thus these funds are being made available by the developed countries not simply because they have the money and the technology, but because of the principle of liability which accurately reflects the responsibility for the damage to the environment. He called for this shift in perception to establish a new path-breaking model for future international cooperation in the field of environment.

INDIA

Environment Minister Criticizes Montreal Protocol

Kamal Nath Speech

93WN0202A Madras THE HINDU in English 24 Nov 92 p 6

[Quotation marks as published]

[Text] New Delhi, Nov. 23—Global environmental cooperation is possible only when international agreements and protocols on the issue recognise the principles of equity and liability, India has said.

At the three-day international meeting on the Montreal Protocol which began in Copenhagen (Denmark) today, the Minister of State for Environment and Forests, Mr. Kamal Nath, delivered a hard-hitting speech. It was made available here today.

Mr. Kamal Nath pointed out that even after the London 1990 amendments to the Protocol, the instrument remained inequitable and did not recognise the principle of liability. He said that the Protocol "falls short of what a just and ideal international agreement should be."

He spoke strongly against those developed countries which were trying to wriggle out of even this amended and inequitable Protocol and wanted the financial mechanism to be re-examined. A dedicated fund, he said, was basic to the Protocol and the premise upon which India had joined. He hoped this mechanism would be honoured and strengthened.

'Technology must be accessible': India also let it be known that substitute technologies must not only be made available, but also made accessible and acceptable. Mr. Kamal Nath spelt out what he meant by this. The technology availability must be backed by funds to buy it to make it accessible, and there must not be any strings and conditionalities attached so that it is acceptable. Arguments about intellectual property rights and patents, he warned, would be out of place here, for it is the responsibility of countries who are members of the

The Minister also pointed out that in the developing countries the use of CFCs (chloro fluoro carbons) was very small in per capita terms. Even after drastic reductions on the part of developed countries and assumed unrestricted use of CFCs on the part of developing countries, the former would continue to deplete the ozone layer at a rate substantially higher than the developing world.

PTI reports:

Mr. Kamal Nath was unanimously elected the President of the fourth meeting of the parties to the Montreal Protocol on the Ozone Layer, ending uncertainty on who will chair the meeting.

There was some uncertainty regarding the presidency of the meeting as the host country Denmark evinced interest in chairing the session.

The issue, according to official sources, was whether the office should be assumed by a developed country or a developing country.

New Items on Ozone List

93WN0202B Hyderabad DECCAN CHRONICLE in English 27 Nov 92 p 11

[Excerpt] [Passage omitted]

New Delhi: India has strongly opposed the introduction of new items on the list of ozone depleting substances, without any firm basis.

The Minister of State for Environment and Forests, Mr. Kamal Nath, who is chairing the fourth meeting of the parties to the Montreal Protocol on ozone layer at Copenhagen, on Wednesday said this would mean that certain products are condemned without proper research and findings.

Mr. Kamal Nath held a series of consultations with the heads of the delegations to resolve contentions issues.

The developing countries are now strongly united in not allowing any changes in the funding mechanism as suggested by some EEC countries.

Sabarmati Pollution Threatens Life Downstream

93WN0204A Bombay THE TIMES OF INDIA
in English 26 Nov 92 p 14

[Article by V.K. Chakravarti]

[Text] Ahmedabad, Nov. 25—The Sabarmati has, over the last few decades, earned the dubious distinction of the most polluted river of the country, calling for immediate action before it spells doom for four million people living on its banks.

"The needs for action is probably a thousand times more urgent than it is the case of the Ganga," says a recent survey of the 400-km-long basin, conducted by the Central Pollution Control Board (CPCB).

It was on the basis of the Sabarmati river basin survey, reviewed by Dr G.D. Agrawal, an eminent environmentalist-turned-ascetic, that the Union ministry of environment had prepared a Rs [Rupees] 1,000-crore national rivers action plan (NRAP), on the lines of the Ganga action plan.

The NRAP has identified 13 rivers in 19 stretches as the most polluted sections, requiring immediate cleaning operation. The Sabarmati, upstream and downstream of the famous Sabarmati Ashram of Mahatma Gandhi, tops this list.

A special reference has been made to the ashram. "No sullage or other waste waters, treated or untreated, should be discharged into the Sabarmati from its entry into Gandhinagar district up to Sabarmati Ashram, to preserve this as a clean stretch worthy of Bapu's ashram," the survey suggests.

"What should clinch the issue is the fact that Gandhiji had himself often bathed in the Sabarmati, just stepping down the stairs of the ashram. Do we have no sentimental attachment to maintain the cleanliness and quality of Bapu's Sabarmati?" the review paper questions the concerned and unconcerned.

"Does not the water prevention and control of pollution act of 1974 lay down the criteria of restoring the wholesomeness of streams?" it asks.

The review adds that the Sabarmati, up to and around Bapu's ashram, has to be designated and quickly restored to class B and no lower. At present, it falls under class E as per the board's scale for classification of streams.

Incidentally, the CPCB findings are indisputable as they have been based on data provided by the state government, civic and Central bodies.

The 13-km stretch of the Sabarmati passing through Ahmedabad has been found by the NRAP as the "most polluted zone"—more polluted than the Yamuna (between Delhi and Agra), Sutlej (between Ludhiana and Harike), Godavari (between Nashik and Nanded) and Damodar (between Dhanbad and Haldia).

The situation is most "alarming" along this stretch of the river, like an open drain carrying only untreated sewer water and effluents from a large number of industries located in and around the sixth largest city of the country, the review states.

Most of the rain water that flows from its origin up to the city is pumped out by wells for the consumption of over three million people living in Ahmedabad, besides the state capital of Gandhinagar and a large number of industries.... Virtually no fresh water flows down half a dozen bridges that link the two halves of the city, it adds.

What is visible as a thin trickle during the lean period is the untreated sewer water or industrial wastes discharged onto the river-bed by the people, civic bodies and industries. In drought years, the water becomes virtually stagnant.

Surprisingly, the industries here—including a large number of textile mills and the newly established chemical and engineering units—contribute 35 to 40 per cent of the total 60,000 kg per day of BOD (bio-chemical oxygen demand) load dumped untreated into the river.

In Delhi and other cities, the industries' share is usually less than ten per cent.

The share of about 10 lakh people living in suburbs and slums having no sewer lines, besides a large section of 20 lakh people living near the river banks, is estimated to be about 15,000 kg of BOD load per day.

The Ahmedabad municipal corporation, the capital project authority of Gandhinagar, and the cantonment authorities daily draw over 600 million litres of water through French wells sunk on the Sabarmati river bed and tubewells in the peripheral areas for drinking and other purposes. On the other hand the sewerage treatment plants at Pirana and Vasna can treat hardly 400 million litres of gutter water per day.

Over 20 lakh people, supposedly covered by a sewerage system, are estimated to be producing one lakh kg of BOD load per day at the rate of 50 gm per capita per day. The existing sewage treatment plant at Pirana treats only 70 per cent of the sewage collected through the system.

A World Bank-assisted project to treat effluents from a large number of factories in and outside the industrial estates of Naroda, Odhav and Vatva (called NOVED) is still to be completed. All the effluents are now poured into the river.

The Sabarmati is one of the very few major west-flowing rivers draining into the Gulf of Cambay. It rises in the Aravali hills, at an altitude of 762 metres, and wends its way 50 km through Rajasthan and another 350 km in Gujarat.

Government Bans Trade in Ozone-Damaging Chemicals

BK0601162093 Delhi All India Radio Network in English 1530 GMT 6 Jan 93

[Text] The government has issued two notifications banning import and export trade in certain ozone-damaging chemicals with countries which are not parties to the Montreal Protocol. India is a party to the Montreal Protocol on substances that deplete the protective ozone layer. The protocol came into force in September last year. Import and export of the noted items with the countries which are parties to the Montreal Protocol however is permitted without a license.

IRAN

Pollution, Shipping Threaten Gulf Marine Life

93AS0324Y Tehran ABRAR in Persian 1 Dec 92 p 1

[Text] (Economic Service)—The level of fishing of eight countries in the region in 1989 amounted to 451,898 tons, 90 percent of which was apparently from the Sea of Oman and the Persian Gulf. This fishing goes on while no initiatives or steps have been taken to improve the condition of marine life in this area, even though environmental pollution, the increased number of vessels, and incompetent and inappropriate management have seriously threatened continued use.

According to a report by our ABRAR correspondent, Engineer Gholamreza Foruzesh, the minister of construction jihad, made this statement in the opening ceremonies of the seventh meeting of the Committee on the Development and Management of Marine Life in the Persian Gulf and the Sea of Oman, which was held yesterday in the presence of the representatives of Saudi Arabia, the United Arab Emirates, Kuwait, Iraq, Oman, Bahrain, and Qatar, and the deputy director of the Food and Agriculture Organization (FAO) of the United Nations in the Azadi Hotel.

Emphasizing the need for the attention of the countries in the region to the prevention of the destruction of the environment and the elimination of the signs of the pollution of the Persian Gulf war, he announced the readiness of the Islamic Republic of Iran for any vital, positive step in this regard and expressed hope that through the cooperation of international agencies and fishing conferences, these problems will be pursued until results are achieved.

In conclusion, the minister of construction jihad added: Attention has been paid to the development of research as the main factor in achieving suitable use of marine life. For this reason, the Islamic Republic of Iran has increased the number of its research centers from one to four in the four southern provinces and has allocated \$13 million to research. Also, in the First Economic, Social,

and Cultural Development Plan, the level of government and private sector investment amounts to more than \$500 million.

In the Second Plan, vast provisions are made for more investments. According to this report, in the conference yesterday, Rasul Lahijanian, the deputy minister of construction jihad and general manager of the Iran Fishery Company, also spoke and said: While there are resources for widespread investment in our countries, organizing these investments can be effective in mobilizing resources through saving on expenditures, which can be done through mutual cooperation in offering high-quality products and competitive rates on the international markets, to make up for the domestic and international needs of the member countries.

Among the important cases that require joint investment is the use of the untapped resources, such as mezzopelagic fish, or the little use of such resources as small pelagic fish.

The reserves and accumulation of such fish in the Persian Gulf and the waters of the Oman Sea is very significant, and it is necessary to design and implement the plan to use them favorably.

It is worthy of note that the seventh meeting of the Committee on the Development and Management of Marine Life of the Persian Gulf and the Sea of Oman will continue its work until 12 Azar [3 Dec].

Arvandrud, Karun River War Debris Cleanup Ordered

93AS0324X Tehran ABRAR in Persian 3 Dec 92 p 9

[IRNA report]

[Text] 2 December 1992 (IRNA)—The shores of the Arvandrud and Karun Rivers in Khorramshahr will be cleared of sunken ships, boats, and barges.

The governor of Khorramshahr made the above announcement yesterday in an interview with IRNA and asked the owners of ships, boats, and barges grounded or sunk during the imposed war to take rapid steps with the coordination of the office of the governor to remove their ships.

Bakhtaran Deforestation, Restoration Efforts Viewed

93AS0324W Tehran ABRAR in Persian 7 Dec 92 p 9

[Text] Kermanshah (IRNA)—This year, 13,642,000,000 rials in funds have been spent on the revitalization of the pastures in the forestation projects and the production of saplings in the province of Bakhtaran.

Engineer Khojasteh, the director general of natural resources in the province of Bakhtaran, made this statement in a meeting of the Agricultural Council held at the office of the governor general of Bakhtaran.

He said: Because of lack of proper protection, the war, and uncontrolled use [of the forests] for fuel by the villagers residing in the cold climate regions, the destruction of the forests of the province of Bakhtaran in recent years has increased by 48 percent compared to before the revolution.

Expressing the important role of the forests in preserving water and soil in addition to economic profit, he asked the officials to pay attention to the preservation and revitalization of the national resources.

In this meeting, the director general of the Rural Cooperative Organization of the province of Bakhtaran also announced: So far, 1.6 billion rials in loans have been given to the farmers of the province of Bakhtaran through rural cooperatives.

Forests and pastures in the province of Bakhtaran cover 1.8 million hectares.

MOROCCO

Impact of Industrial Waste on Sebou Basin

93WN0165A Rabat L'OPINION in French 19 Nov 92
pp 1, 3

[Text] On 12 November the Ministry of Commerce, Industry, and Privatization sponsored a technical seminar devoted to the discussion of the conclusions of the first phase of the study on the impact of industrial waste on the quality of the water in the Sebou Basin.

This study, carried out in the framework of technical and financial cooperation between Morocco and Sweden, was begun in April 1992 and is due to be completed toward the middle of 1993.

It has the following objectives:

- Identifying the industrial wastes and evaluating their specific impact on the quality of the water, taking into account other sources of pollution (agricultural and small industrial activities and urban, metropolitan areas);
- Proposing technological solutions aimed at even reducing this pollution;
- Evaluating the investments required and identifying in each case the source of financing for them;
- Proposing accompanying measures, including those to facilitate the proper implementation of the action plan recommended.

This study will be carried out in three phases. The first phase essentially involves the evaluation of the present situation to determine the prospects for future development in the quality of the waters of the Sebou Basin by the year 2015. We present the results of the first phase below:

Industries of the Sebou Basin

The industries of the Sebou Basin were divided into four principal zones, three of which are located around the cities of Fes, Meknes, and Kenitra. One zone consists of agriculture and food, cellulose, and petrochemical units located in the Gharb area.

An industrial survey was undertaken, and its results have partially guided the subsequent study. Of the units involved, about 100 were set aside for a more detailed study, using surveys, analyses, and studies of manufacturing procedures, according to the following criteria:

- Factory effluents of which threaten to affect the people's health;
- The use and/or dumping by a given factory of toxic substances or heavy metals likely to poison the surrounding flora and fauna;
- The dumping of large quantities of organic substances by a given factory, which have a high Biological Demand for Oxygen (DBO).

The hydrographic area of the Sebou Basin contains a large number of industrial plants whose manufacturing processes pollute the local area. These plants, which are of various sizes, cover a broad range of industrial activities. The consultant considers it possible to classify these plants in a general way in terms of the following criteria:

- Activity and type of pollution (Industries whose discharges are essentially organic and industries whose discharges contain toxic materials; industries with organic discharges, including sugar factories, cellulose plants—which produce paper pulp and paper—and vegetable oil factories);
- Other industries such as plants processing dairy products and yeast, breweries, and abattoirs;
- Industries discharging toxic products (including tanneries, plants treating various surfaces, and the textile industry).

The industrial survey, to be carried out with a grant in the form of services provided, has the objective of collecting data to make the evaluation of the pollutant load in the Sebou Basin area more reliable.

The survey will provide a detailed analysis of the industrial plants in the Sebou Basin in general and in the Fes-Meknes area in particular. First of all it should be noted that the technical level of the large, medium-sized, and some of the small companies located there is often excellent. Moreover, in general these companies have very good management and are successful and profitable in economic terms. Supervisory personnel of these companies have often had advanced training.

Other PME [small and medium-sized companies] have been slow to adopt modern techniques, and the technical quality of their management, in the majority of cases, is reflected in a high rate of waste, both in financial as well as in material terms.

In general, as far as these companies are concerned, we have observed very little interest in the impact of their discharge of waste products. The industrial managers concerned do not feel directly involved in this subject.

Furthermore, we have been able to note that the causes of their poor environmental management, among other factors, resulted from:

- The location of several factories in an urban area;
- Excessive density in several industrial zones;
- The presence of several different types of industrial companies (both in terms of activity and size) in the same industrial zone.

Sampling and Analysis

To know more specifically the extent and types of industrial of pollution, two groups of companies were chosen for sampling and analysis. One group consisted of 19 factories of different sizes, and the other group consisted of eight large factories in the Gharb area. The two groups were handled in the same way, and the same kind of analytical study was made of their manufacturing processes.

In all 22 different factories were visited. Samples were taken of both their internal and external discharges.

Textile Industry

Waste discharges in this sector consisted in particular of the residue from washing cloth and yarn with caustic soda. The printing of cloth caused the discharge of chrome wastes. In view of the toxicity of this metal, it was essential to determine the quantities discharged.

Treatment of Surfaces

The treatment of surfaces involves the dumping of a considerable quantity of heavy metals which are particularly harmful to the environment. Pollutants include wastes from treating surfaces with chromium, nickel, and brass, dry cleaning cloth, as well as washing materials.

Tanneries

During the conduct of the analyses the consultant visited three tanneries. Analysis of the discharge revealed heavy deposits of chrome. The processing of animal hides requires the use of a large quantity of chemical products. Apart from chrome, the most harmful pollutants are sulfites, the remnants of animal hair, and fats.

Beer and Wine

Pollutants derived from the beer and wine industry are principally the result of washing bottles and the regular cleaning of the installations (with caustic soda, phosphates, and rinsing products).

Dairy Industry

The bulk of the waste products in this industry come from washing and cleaning operations, which use caustic soda, calcium chloride, and nitric acid to disinfect the equipment. The quantity of milk present in the waste products naturally influences the DBO measured.

Abattoirs

In the course of this survey the consultant visited the Fes Abattoir. The presence of biological matter was clearly high, and it influenced the DBO value. These values fell immediately to a very low level on the days when no animals were slaughtered.

Agar-Agar

The procedure followed in turning out this product consisted of three stages: washing the marine algae, extracting the juice, and the jellification process. Waste products from the processing of agar-agar varied a great deal over time and were highest when the filters were washed.

Sugar Factories Processing Sugarcane

Pollutants from sugar factories processing sugarcane are found in the residual products but also in the dregs, the sludge, and the ash resulting from burning sugarcane, which is the source of energy of the various sugar-producing units. These wastes present no particular treatment difficulties, using mechanical and biological methods.

Sugar Factories Processing Sugar Beets

The pollutants from these industrial units include residual liquids after production, the dregs, and the sludge. All of these waste products can be treated easily, using mechanical and biological procedures.

Alcohol Distilleries

This activity results in the discharge of small quantities of water. However, because of their composition they pose serious problems. Yeast discharges cause high yields of DBO5 and DCO [chemical oxygen demand].

Paper Pulp, Paper, and Cardboard Industries

Factory units in this sector have two problems in common: large discharges of fiber and too high a consumption of water. The water discharged by the bleaching units contains calcium chloride and hydrates of carbon chloride. It is plausible that future technological development, combined with the entry into the market of paper pulp bleached without the use of calcium chloride and ecological pressure to prohibit the use of calcium chloride will lead eventually to the reduction or elimination of this nuisance.

The survey noted that for the future, environmental protection of the areas around industrial plants in

Morocco it will be essential to consider each watercourse, dam, or aquifer as a potential resource. The use of each of these would have its own cost.

That consideration also has the effect of seeing in properly treated, waste water a potential resource for irrigation. This kind of resource also would have an economic value. If existing regulations were to provide water free of charge and prohibit industrialists from reselling water for other purposes, a change in these regulations would be a powerful stimulus to encourage future water quality, as well as the efficient use of water in the Sebou Basin.

Agar-Agar

The method of using successive aeration ponds for agar-agar should be very suitable for this type of industry.

Study of Pollution

The different sectors involved include:

- Human settlements, that is, cities, villages, and individual, isolated places whose sanitary discharges are dumped into the rivers. The discharges considered in this survey have been limited to those from communities with sewer systems, which discharge untreated waste into a nearby river.
- Agriculture, which uses water for irrigation, discharges fertilizers and sprays plants with pesticides. The pollution discharged into a nearby body of water is partly in the form of drainage from irrigation ditches and from the runoff of rain water.
- Industry, which uses water for its manufacturing processes and dumps this effluent into a body of water, most often without treatment.
- Small craftsmen, who operate under conditions similar to those of industry but often less efficiently. Therefore, they discharge more substantial quantities of effluent.

In view of the differences between the various sources and types of pollution an exact or even scientifically similar result cannot be provided. However, we can define the following parameters which are common to the different kinds of pollution:

- Biodegradable pollution, which is characterized by biological oxygen demand (DBO) and chemical oxygen demand (DCO). These parameters come from human settlements, large scale livestock raising, manufacturing industry, and small craftsmen.
- Pollution in the form of nutrient salts, which have nutritional effects. These are principally products containing nitrogen and phosphate, measured as total nitrogen (Total N) and total phosphate (Total P). The principal source of these products is agriculture. However, the three other types of pollution contribute to the total to a certain extent.
- Toxic pollution in the form of heavy metals, coming principally from industry and small craftsmen.

- Other toxic pollution coming from industry and small craftsmen (aniline and other dyes used by the textile industry, cyanamides, surface treatment acids, etc.) and from agriculture, particularly in the form of pesticides.

Study of the Prospects

In view of the estimates of the extent of pollution, we have understated the evolution of the situation if no action is taken to improve the discharge by different economic sectors in the Sebou Basin, according to the types of nuisances between the base line year of 1990 and 2015.

The year 1990 was chosen because it coincided with plans to divert the course of the Sebou River from Lac de Garde to normally dry watercourses located farther to the South.

The results of simulations showed a dramatic increase in the biological load of the river (more than double as much). The fact that already about 70 km of river below Fes are periodically totally lacking in oxygen is enough to make us understand that the whole river will no doubt be lifeless by 2015.

Neither should we neglect taking nutritive material (P and N) into account, which will also double during the period from 1990 to 2015.

Effluents containing heavy metals will triple during this period. Dealing with this nuisance, which is cumulative, should be given priority by decision makers.

We were able to note that the biological load was very substantial, the quantity of pollutants derived from fertilizers was disturbing, while the content of heavy metals was at an unacceptable level. The advantage of the situation affecting the Sebou River is that it seems that, in terms of most pollutant elements, apart from chrome, the situation is not irreversible. Biological pollution is the simplest to deal with. The quality of the water would be greatly improved if action were taken in this area, both at the urban as well as the industrial level. Better management of irrigation, with efficient maintenance of the drainage network, a reduction of phosphates in detergents, and establishing stations at the village level to purify the river could reduce the load of fertilizing elements in a dramatic way.

In conclusion, it would be appropriate to remark that the quality of the water of the Sebou River cannot be maintained and improved to an acceptable level unless all of the sources of pollution are taken in hand, including biological discharges by urban areas and industry, discharges of fertilizing elements by everyone, and heavy metals by industry and small craftsmen.

A legislative and institutional study has proved that the authorities:

- already have the legal resources, as of now, to check on and implement an environmental management policy. These legal resources could be strengthened

easily by updating the decrees and regulations providing for their application. However, over the long term, additional legislation and a strengthening of the legal framework would be required;

- have the institutional apparatus for handling this task. However, on the one hand, they do not always apply the provisions of the laws and, on the other hand, are not required to do so. As far as those who are directly involved are concerned, they do not have the human, technical, and financial resources to apply the laws.

As a result of the surveys which have been carried out the consultant was able to take note of the following facts:

- The Sebou Basin is of very great importance for the country. Together with the coastal regions, it is one of the main driving forces of the economy and of economic development. Its potential for irrigation is very substantial and is used to a large extent. The new, El Wahda Dam will complete this irrigation system.
- There is a large industrial concentration in Fes, Meknes, in the Gharb Plain, and in Kenitra. The "worst examples" of pollution are naturally found in these areas.
- In general, the largest industries located in the Sebou Basin are modern and are managed by competent personnel. The consultant considers that with no major difficulty these units could participate technically and at the management level in the rehabilitation of the Sebou Basin.
- The smallest industrial units are so diverse that they require a more qualified judgment. This is particularly true for those companies that have recently changed from the status of small, artisan type enterprises to larger scale industry. The techniques exist and are often simple. However, the failure to recognize environmental problems in this regard is often striking.
- Pollution is often of such a character that reversing the situation as a whole is possible. However, an exception must be made in the case of chrome, which is dumped in large quantities into the river and which is accumulating there.
- Industrial pollution accounts for a substantial part of total pollution. However, it should be remarked that pollution coming from human residential areas and from agriculture are relatively more important than pollution coming from industry. This is true in all areas, except with regard to heavy metals, for which tanneries have the greatest responsibility.
- Moroccan lawmakers have provided the country's leaders with a relatively complete range of legislation. If these laws are applied vigorously after the decrees and regulations for their application are modernized, this would make it possible to manage more effectively the quality of the country's water in general and the waters of the Sebou Basin in particular.
- Finally, it can be noted that the administrative resources available for this kind of management are rather limited. However, extending the powers of certain officials by giving them a role in environmental management would improve things considerably.

REGIONAL AFFAIRS

G-7 Agreement on Safety Fund for Former USSR Nuclear Plants

LD2112093392 Moscow ITAR-TASS in English
0853 GMT 21 Dec 92

[By ITAR-TASS correspondent Vyacheslav Bantin]

[Text] Tokyo, December 21 (TASS)—An understanding to set up an international safety fund for nuclear power plants of the former USSR may be reached between the G-7 countries before their leaders meet in Tokyo next July.

The Tokyo SHIMBUN newspaper referring to Japanese government quarters, reports on Monday that this has been made possible thanks to a change in the position of the United States which was very lukewarm to the idea of setting up such a fund.

The G-7 leaders at their latest meeting in Munich reached agreement on the need for the West's joint actions to ensure safety of about 50 nuclear power plants in the republics of the former USSR and some East European countries.

Taking into account great concern of the international community over peace atom safety in the countries of the former communist bloc, Germany, France and some other European Community countries suggested that an international fund be set up.

This fund would help finance programmes promoting higher safety at nuclear power plants in the former USSR and Eastern Europe. The fund's volume is planned to be 700 million dollars.

But it is not clear for the time being whether the United States and some other G-7 countries agree to this sum, since they treated negatively, till recent past, the initiative advanced by European countries to set up such a fund.

It is assumed that this issue will eventually be settled before the Tokyo G-7 summit which will have the final say on setting up a safety fund for the former USSR's nuclear power plants.

Four States Sign Protocol on Caspian Sea Fishing

93WN0228A Moscow IZVESTIYA in Russian
11 Jan 93 Morning Edition p 2

[Kim Smirnov report: "Caspian Biological Resources Will Be Saved"]

[Text] The hope has been born that an end will be made to the lawlessness and plundering that has reigned in recent years across the Caspian and has threatened not only to nullify the achievement of scientists from the former

Soviet Union in restoring the sturgeon in the estuaries of the Volga and the Ural, but also in general to choke off life in the planet's largest lake.

As IZVESTIYA has reported, in Astrakhan, at the initiative of the Russian Federation (notes to all states were circulated through the Russian Federation Ministry of Foreign Affairs), the deputy chairman of the Russian Federation Fishing Committee, V. Baskakov, met with empowered representatives of the fishing organizations of Azerbaijan, Kazakhstan, Russia, and Turkmenistan. A protocol was signed on cooperation in studying, protecting, reproducing, and making rational use of the biological resources of the Caspian. Relying on forecasts from scientists, the sides confirmed permissible levels for catches this year: the Russian Federation—201,000 metric tons, Kazakhstan—50,000 metric tons, Turkmenistan—46,000 metric tons, Azerbaijan—36,000 metric tons. Fishing will be carried on strictly in accordance with the rules for fishing that existed in the USSR. The ban on catching sturgeon in the Caspian Sea will remain in force. But since this business is carried on only on the Volga and Ural Rivers, the Russian Federation and the Republic of Kazakhstan will share with the others participating in the agreement a strictly guaranteed proportion of the sturgeon catch. This will be allocated as follows: for Russia, 3,840 metric tons; for Kazakhstan, 1,300 metric tons; for Azerbaijan, 500 metric tons; and for Turkmenistan, 360 metric tons.

A general program for scientific research work in the Caspian in 1993 has been adopted. A joint commission is being set up to handle its resources. Its first meeting will take place in February-March.

RUSSIA

Environment Minister Reviews Year's Activities, Plans for 1993

93WN0238A Moscow ROSSIYSKIYE VESTI
in Russian 13 Jan 93 p 3

[Interview with Viktor Danilov-Danilyan, minister of the environment and natural resources of the Russian Federation, by Aleksandr Iskandaryan, ROSSIYSKIYE VESTI correspondent; place and date not given: "Criterion of Cleanliness"]

[Text] [Iskandaryan] Tell me, please, in a few words about the activity of your ministry in the past year.

[Danilov-Danilyan] The main activity of the Ministry of the Environment and Natural Resources of Russia in 1992 was directed at implementation of the provisions and requirements of the Law on Environmental Protection which has been adopted for the first time in Russia. Particular attention was given to the creation of economic incentives and key factors with whose assistance rational use of the environment will be ensured. One of the more important achievements in the current year

was the elaboration and implementation of the scientific-technical program "The Ecology of Russia." In addition, a comprehensive scientific federal program, "The Ecological Security of Russia," is planned for the years 1993-1995. We are also engaged in defining scientifically based criteria for assessing the state of the ecology and identifying areas with emergency ecological situations and ecological disaster areas. Jointly with the State Customs Committee, measures have been adopted to control the export of items of the animal world and the vegetable kingdom from Russian territory, including those that fall under the action of the International Convention on Trade in Forms of Wild Fauna and Flora Threatened with Extinction.

This year we established a comprehensive program to ensure protection and rational use of the natural resources of the Lake Baykal basin. Drafts are being developed of seven special-purpose ecological programs whose implementation will start in 1993.

A procedure is being developed for ascertaining payments for environmental pollution, disposition of wastes, and discharge and disposal of polluted matter into the environment. Already readied for approval is a temporary procedure for fixing payments for forest, water, vegetable, and animal resources, and a temporary statute on licensing wildlife utilization.

It is planned to establish new preserves in Kaluga and Murmansk Oblasts and the Republic of Buryatia. Work is being conducted on the organization of another nine preserves in the Tuva Republic, Taymyr, and Rostov, Moscow, and Kamchatka Oblasts.

In 1992 state expert ecological organs examined 32,000 draft and normative documents and accomplished 18,000 other types of work, including participation in the selection of sites for the construction of economic and other installations.

We prepared and published the state report "On the Condition of the Environment of the Russian Federation in 1991."

[Iskandaryan] *A few words about plans for 1993.*

[Danilov-Danilyan] In 1993 the ministry will continue its activity in all main directions—ecological expert analysis, ecological inspection and monitoring the state of the environment, and regulation of the use of natural resources. We will begin the implementation of a scientific-research program, and also a program associated with the preservation of unique environmental systems and the ecological improvement of individual territories. We will give particular attention to the program of ecological sanitation of Tula Oblast. We view this program as a kind of standard, and we plan to circulate it, with some changes, to other entities of the Russian Federation. We are hoping to energize international cooperation, and, most of all, to establish ties with the World Bank, to which we have sent various drafts in the sphere of ecology. In the New Year we will begin the

establishment of a system of monitoring ecologically dangerous installations. This project was prepared jointly with the FRG, and we hope to attract the attention of the European Community to it.

Specific projects are being developed in the sphere of nuclear power engineering, oil and gas drilling, and metallurgy.

Yablokov Cited on Moves To Improve Ecological, Health Situation

PM0801101193 Moscow IZVESTIYA in Russian
6 Jan 93 Morning Edition p 6

[Kim Smirnov report incorporating interview with Aleksey Yablokov, adviser to the Russian Federation president on questions of ecology and health protection and corresponding member of the Russian Academy of Sciences; date, place not given: "Action in Respect of Antiecolology"]

[Text] Two "white books" were prepared recently for the first time thanks to the efforts of scientists, the government, and the president's team—state reports on the state of nature and of the health of Russia's population. An honest, exact diagnosis. And a terrible one. What are "the president's men" doing to ensure that the subsequent annual reports are not still more terrible? I addressed this question to Aleksey Yablokov, adviser to the Russian Federation president on questions of ecology and health protection and a corresponding member of the Russian Academy of Sciences.

Finding the ecological state of the federation desperate, he believes that what is needed is immediate concerted action by all the powers—the legislature, the executive, the judiciary, and the mass media—in four main areas. These are the enhancement of the people's ecological initiative, the elimination of radioactive pollution, the improvement of the quality of drinking water, and the easing of the situation in regions of ecological disaster.

The time has come to turn the flow of petitions with which our citizens continue to inundate all bodies—from the Ministry of Ecology to the president—into an impressive number of court actions in which the damage to a specific person's health and well-being would be estimated at millions of rubles. And, to begin with, to ruin at least several polluting enterprises. "We will support such actions," the president's adviser promised.

Ecological safety. The Russian Federation Law on Environmental Protection, adopted last year, will soon be followed by laws on nuclear power generation and radiation protection—they are already about to appear. It is monstrous, but when almost all countries had long since made themselves secure behind an entire palisade of similar laws, we did not have any at all.

On the initiative of the Russian president a draft law on ecological safety will be submitted to the Supreme Soviet. For no fewer people die in ecological disasters

than in military conflicts. Forty percent of the men who died in our country in 1991 did not live to pension age. Excessive pollution of the environment is one of the chief reasons for this.

Federal natural resources have to be allocated following agreement with the subjects of the federation. This has not yet been done. In the United States, for example, almost half the territory is federal property. The creation of new reserves and national parks will continue in 1993.

"We have become accustomed," A. Yablokov said, "throughout last year, to seeing Gaydar's government under critical fire from both the right and the left. But few people know that it 'outdid' all the previous Russian authorities in terms of the number of new natural territories placed under state protection."

Water. Already this year there will be laws on forests, on water resources, and on drinking water. Here is a paradox: The production slump in the country has made the atmosphere somewhat cleaner, but water is becoming increasingly dirty. We are still extremely extravagant with water consumption. You also cannot rectify overnight a major strategic miscalculation of previous years: Our drinking water intakes were constructed to use surface waters, although in the West drinking water has long been taken from deep tables. But we dispatch our industrial waste there. The inevitable priority step is to introduce payment for water.

[Smirnov] But how can we introduce it, when we do not have mass production of water meters?

[Yablokov] At first there will probably be collective payment for water consumed, let us assume, by an entire apartment block.

[Smirnov] But this is egalitarianism and will cause universal displeasure!

[Yablokov] It is then that the incentive to buy and produce individual meters will appear. We do not yet have a market for the ecological industry. But you cannot create one by presidential edicts alone. It is precisely economic approaches that are needed here.

Disaster regions. We have many of them. But not one has yet been singled out legislatively. For, under the law, to declare a territory a region of ecological disaster means closing down practically all industrial enterprises. And this means depriving thousands of people of the means to live.

At present there is one way out: to strive in each specific case to ensure that the profits being made by industry in such regions are not taxed if they are used to improve the ecological situation. This is already being done in respect of Chelyabinsk (a special government decision). Decrees are being prepared for Cherepovets and Nizhniy Tagil.

From the editorial office. IZVESTIYA will report on the first action in respect of an ecological crime after this article and will give an account of the court trial relating to this action.

Russia Makes Little Progress Toward Protecting Environment

93WN0220A Moscow *ROSSIYSKAYA GAZETA*
in Russian 5 Jan 92, p 1

[Article by Tatyana Smolyakova: "Waiting for a Living Environment"]

[Text] Shortly before the new year the report of the UNEP [United Nations Environment Program] on the condition of the environment in the world from 1972 to 1992 reached Moscow. What was the conclusion of the authors of this capital study? It was quite sad: despite the fact that during that period the global community has done more than ever before in the area of environmental protection, the situation has become much worse and the process of destruction of the environment is accelerating.

Unquestionably, over the past 20 years mankind has become wiser, sufficiently so to realize the danger of self-destruction. Alas, but not to the extent to be aware of this on a daily basis. Doctor M. Tolba, executive director of the UN Environmental Protection Program (UNEP) has made a rather harsh assessment of the situation: despite the conclusions drawn at the UN Conference on the Environment and Development business remains in the lead. Brilliant ideas which appear here and there do not compensate for what is described as an overall failure of political will."

Without assuming such a categorical stance, we must recognize that the process is developing unevenly. Nonetheless, the developed countries with a stable economy find the possibility of pressuring business and forcing producers to convert to cleaner technologies, at least on their own territory. Without hurriedly loosening their purse strings to resolve global ecological problems, they nonetheless manage to put their own house in order.

The developing countries, among which Russia is already openly being classified, are a different matter. The fact that our ecological situation is quite bad is general knowledge. Still, no one knows with absolute certainty what the actual situation is. Even the government's report on the state of the environment, which the President described as a most reliable document, includes the stipulation that the compilers of the report have been unable totally to surmount the difficulty of obtaining the necessary information and thus to ensure its reliability. Furthermore, for a number of months the Supreme Soviet has been complaining that the military department is not providing it with accurate data on the location of buried radioactive waste! What a good topic for a satire!

For the sake of fairness we must say that over the past year Russia's legislative and executive authorities have repeatedly addressed themselves to problems of environmental protection. A number of documents have been drafted, providing a legal base for such work. Resolutions have been passed on the solution of specific local issues. International ecological cooperation is expanding. It so happens that on this very day yet another intergovernmental agreement between Russia and the Netherlands is about to be concluded.

Unquestionably, all of this is necessary and important as an initial step. However, this is no more than a drop in the sea. To speak of any radical change in the way of thinking and the manifestation of political will is still too early. We have still not abandoned our old routine: we draft a document and the authors immediately forget about it and, when monitoring its implementation comes, they issue a decree on the implementation of the resolution.

It is no secret that we treat our Ministry of Nature as second rate. This feeling of damage influences all activities of the department in charge of environmental protection. The vagueness of its functions and rights, social lack of protection of the personnel on the lower levels, and chronic lack of funds prevail. It is only whenever an emergency situation arise here and there that the government finds the necessary funds to patch up the tear.

At this point the very sober realists will immediately object that: what do you want, "Green" gentlemen! Today it is not a question of cutting the fat but of survival, providing that we do not become extinct. But then what will such survival be worth to our sick progeny if it happens to be wiser than we are?

A few months ago the RAN Systems Analysis Institute issued a projection on the expected ecological situation. It was a rather sinister forecast, we must say and, unfortunately, a great deal of it has already happened. For example, it predicted an increase in emergency situations of a technological origin. According to the data for November, the number of accidents nearly doubled compared to 1991. The reasons as well were named precisely: the high degree of wear-out of technological, transportation and cleansing equipment, comprehensive violations of technological discipline, reduced funds for the use of nature in the construction, reconstruction, and operation of environmental protection equipment.

The scientists also warned about the total cutting off of trees in the transportation-developed areas and increased illegal felling. For the time being, the barbaric destruction of forests has not become total. However, what is taking place today in the Far Eastern taiga provides a very alarming symptom.

As was anticipated, production decline in industry has reduced, albeit disproportionally, the emission of harmful substances into the air. At the same time,

however, the pollution of water reservoirs with sewer waters has intensified as a result of breakdowns.

Nothing unexpected has happened concerning the state of health of the population or in the dynamics of the birth and death rates: the first two are steadily declining while the third is rising.

Understandably, in the new year all of these trends will not only remain but, like a train running down a slope, will increase their speed. That is unless priorities in the policies of the government are changed radically. Nonetheless, what is strange is the following: it has long been confirmed that investing money in the preventive treatment of nature and, therefore, of man, is always less costly than curing.

New Chief of Defense Ministry Ecology Directorate Interviewed

93UM0288A Moscow KRASNAYA ZVEZDA in Russian 18 Dec 92 p 1

[Interview with Russian Federation Ministry of Defense Ecology and Special Protection Systems Directorate Chief Colonel Sergey Ivanovich Grigorov by Russian Federation Ministry of Defense Press Service Associate Ivan Sas, under the rubric: "First Interview in the New Post": "Colonel Sergey Grigorov: 'Society Can Count on the Army During Ecological Cataclysms'"]

[Text] A new structure has been created at the Russian Federation Ministry of Defense—the Ecology and Special Protection Systems Directorate. Colonel Sergey Grigorov heads it. He is 46 years old and he is a candidate of technical sciences. He was previously involved with issues of meteorological and geophysical support of the Armed Forces.

[Sas] *Sergey Ivanovich, can we consider that "green" helmets along with "blue helmets" have now appeared in the Russian Armed Forces?*

[Grigorov] In a definite sense, yes. This is not a service or combat arm but special structures which have been tasked with the functions of ecological support of the Russian Army and Navy.

[Sas] *How do you assess the "inheritance" which has been left to you? Total neglect? Are you beginning from zero?*

[Grigorov] We have reason to curse the era of stagnation. But it would be simply dishonest to make the appearance that there were no honest and responsible people prior to us who understand with which weapons and with which programs they were dealing and with what ecological consequences any incomplete treatments were fraught. It is through their efforts that much has been reduced to the level which—I say this with total responsibility—corresponds to world ecological requirements.

[Sas] *Recently the perception has formed in the public consciousness that allegedly any "stirring" of the Armed Forces entails nearly ecological cataclysms...*

[Grigorov] I cannot agree with that point of view. Serious scientific research indicates that the ecological damage inflicted to nature by troop activities totals only several percent of the total damage. I want to stress: these data are not from the Ministry of Defense but from environmental protection organizations that are independent of defense department.

In general, I am not an advocate of dividing environmental problems into "civilian" and "military" problems. These are nationwide problems. And even worldwide—take Chernobyl, radioactive burials in the Karsk Sea or the aftermath of weapons and military hardware tests. Incidentally, the latter is under our rapt attention. At the present time, we are working on the formation of promising scientific-research programs on the restoration of the environment that has been contaminated as a result of troop activities. Practical realization of these programs has already begun.

[Sas] *As far as I know, environmental protection structures previously existed in the Armed Forces...*

[Grigorov] Actually, an inspection for environmental protection was created eight years ago under the Armed Forces Rear Services and inspectors were introduced into the branches of the Armed Forces. However, their activities were reduced to just monitoring functions. Our directorate acts in the role of head organizer and coordinator of the environmental protection work on the scale of the entire Ministry of Defense.

What are its tasks? To lessen to the maximum extent possible and to exclude when possible the negative impact of troop activities on the environment. To carry out the protection of units and subunits when they have to operate under the impact of extremely unfavorable factors, as it was, by way of illustration, in the Chernobyl AES [Nuclear Power Plant] accident zone. Therefore, the directorate is also called—ecology and special protection systems. And, finally, to organize cooperation with other ecological departments and organizations. Society can count on us during ecological cataclysms.

[Sas] *But do the Armed Forces have real capabilities for effective resolution of ecological problems?*

[Grigorov] The army has on more than one occasion confirmed that through specific deeds. The Armed Forces has special equipment, individual protection systems, and medical systems which, without any preparation whatsoever, can be used in emergency situations. Enormous scientific potential, that is capable of carrying out ecological tasks, not only for the army, but for society as a whole, is concentrated in military structures. Today, six doctors and more than 10 candidates of science work in the directorate alone. Among them are meteorologists, chemists, doctors, space specialists, and others. Meanwhile, the army is continuing to accumulate unique experience. Say, right now special subunits that are conducting effective work have been created and are operating in the Western Group of Forces.

[Sas] *Are there ecological structures in the armies of the Western countries?*

[Grigorov] Of course. In the United States, say, approximately the same directorate as ours exists in each service of the armed forces. They have a lot that is instructive. A great deal of resources are being invested in ecological programs there. For example, nearly \$237 million was spent on measures to protect the environment in Fiscal Year 1990 alone. For now, we can't allow ourselves such expenditures. But we can do a lot even with the resources that we do have.

[Sas] *I have had the opportunity to hear this opinion: it would be better to remove the ecological directorate from subordination to the Ministry of Defense so that no one could pressure it.*

[Grigorov] There could possibly be some logic here if we intended to carry out only supervisory functions. I repeat, we are assuming responsibility for the organization and coordination of environmental protection work in the Armed Forces. And here our structural dependence on the Russian Federation Ministry of Defense not only does not interfere, it also promotes the resolution of the primary task.

[Sas] *But still, Sergey Ivanovich, you will agree that they haven't come face to face with, as they say, a "live" ecologist anywhere at Far East and Polar garrisons.*

[Grigorov] I understand the rebuke. I assure you and the readers—we will not be confined to the limits of Arbat Plushchad. On the agenda—is ecological passportization of all military facilities and regular work on location.

Russia, Denmark Sign Environmental Cooperation Accord

93WN0245A Moscow SELSKAYA ZHIZN in Russian
14 Jan 93 p 3

[Article by Leonid Kruglov, SELSKAYA ZHIZN science columnist, under the rubric "Ecological Diary": "The First Step Has Been Taken"]

[Text] **An accord has been signed in Moscow between the Government of the Russian Federation and the Kingdom of Denmark on cooperation in the sphere of environmental protection.**

The flight time from Moscow to Copenhagen is one and a half hours. Close neighbors, except that we have no common border. The Baltic Sea separates us, but, more accurately, unites us. Its ecological condition has now become a cause of continuous headaches for scientists and governments of the states of Northern Europe that are situated on previously empty and now densely populated shores. Nature here is so vulnerable, because of the nearness of the Arctic, that any error in dealing with it turns into common trouble. It is not surprising that it is specifically the inhabited environment that becomes the priority in international contacts. A striking example

of this is the signing of an important document between our countries that was drawn up in strict compliance with the spirit and letter of universal ecological legislation.

"Preservation of the living envelope of the planet—the biosphere—today occupies the most important position among the problems that face humanity," said Viktor Ivanovich Danilov-Danilyan, minister of environmental protection and natural resources of the Russian Federation, after the agreement was signed. Denmark and Russia have many common ecological concerns. The purpose of our cooperation is to improve the condition of the environment and increase ecological safety in both countries, and in the Baltic as a whole, and to prevent any kind of pollution of the environment. This involves a reduction in the discharge of harmful substances that pollute the environment which, as is well-known, after getting into the atmosphere or water reservoirs, do not recognize borders; protection of the vegetable and animal kingdoms; and the employment of modern technologies in industrial and agricultural production which create the least strain on nature.

"Just two to three years ago such an agreement between our countries would have been impossible," said Per Stig Moller, Danish minister of environmental protection and natural resources. "It was thought that the condition of the environment in the former USSR was ideal. Only one answer was given to any one of our queries about the level of pollution of the sea by industrial sewerage, and the movement of sulfur dioxide in clouds, causing acid rain—these are exceptional cases, which do not affect the quality of the environment."

Now, our relations with Russia in the sphere of ecology will be built on an open basis. Most of all, this concerns an exchange of advanced, ecologically pure technologies. They will be introduced first of all in Novgorod, Pskov, and Leningrad Oblasts. Our government is allocating 10 million kroner to 10 projects that will be conducted in Russia. Among them, effective measures for the safety of nuclear electric power stations, the production of food products that do not contain harmful substances, and the protection of the air, water, and soil from pollution. These investments will be made in specific projects, including agricultural projects. There is promising cooperation in the sphere of the reprocessing of manure from livestock-raising complexes into manure gas. An examination is being made of the question of the utilization on farms of reliable and powerful electric engines using wind energy. Another direction is the improvement of land that suffered from the Chernobyl catastrophe.

Indeed, our countries are tied by longstanding historical and cultural relations. Danes will take part in the establishment of an international biospheric preserve on the Komandorskiye Ostrova. "A fledgling from Peter's nest"—the famous navigator Vitus Bering, the Commander, as he was called, opened up this archipelago and the Aleutian Range to the glory of Russia. He is also known for discovering the strait between Chukotka and

Alaska, which now bears the name of the famous Dane—an officer of the Russian Navy. This brave man is buried there on the remote Komandorskiye Ostrova under an Orthodox Cross.

Tiny Denmark does not catch the eye on the huge physical map of Eurasia hanging in the conference hall of the Ministry of Environmental Protection and Natural Resources. But the fact that the people who live there have a high regard for the environment is well known throughout the world. Before the new year I had occasion to talk with directors of the Europlant ApS company, which grows Christmas trees on special plantations, including also from seeds of fir trees gathered on the Borzhomi tree farm of Georgia. They were shocked when they found out that in our country before the holidays poachers cut down many thousands of spruces in suburban forests. They would not mind opening branches of their firm in our country. Why should we not diligently adopt the experience of the Danish protectors of the environment? A long journey starts with the first step, but, after all, it has to be taken.

Government Takes Steps To Aid Russian Chernobyl Victims

*LD2112151592 Moscow Radio Rossii Network
in Russian 1200 GMT 21 Dec 92*

[Text] The Russian Government has adopted a range of urgent measures to provide social aid to Russian victims of the Chernobyl accident. The Health Ministry and State Committee for Chernobyl have been expressly instructed to examine within two weeks how to organize treatment for people irradiated during the cleanup operation at the nuclear power station, and to set up a federal authority for medico-biological and emergency problems. A number of government departments and also the Bryansk oblast administration have been given two weeks to submit to the government coordinated proposals on the construction of a Russian radiology diagnosis and treatment center in Bryansk. Other measures are also envisaged.

Design for NP-500 'Passive' Reactor Unveiled

*93WN0244B Moscow KOMMERSANT-DAILY
in Russian 23 Dec 92 p 2*

[Article by Anna Shcherbakova: "Plan for a Nuclear Plant of a New Generation: New Solution to Problem of Safety in Nuclear Energy"]

[Text] Yesterday at the St. Petersburg Atomenergo-proyekt Institute work was completed on the design of the main objects of the power generating unit of the NP-500 new generation nuclear power plant. For the first time in domestic practice, when designing the plant, in addition to the "active" principle, they used the "passive" principle of protection in emergency situations. This will make it possible to significantly raise the level of the plants' safety as compared to those already in existence. According to

experts' estimates, the design conforms to world standards of developments in this area.

There are nine nuclear power plants in operation in Russia, at which 28 energy blocks are operated: 12 of the VVER [water-moderated, water-cooled] type, 11 of the RBMK [channel-type, graphite-moderated] type, and five with reactors of other types. During six months of 1992 106 violations of various kinds were reported at them. Of these violations 65 percent occurred in energy blocks with VVER reactors, and 30 percent (with more serious consequences)—in reactors of the RBMK-1000 "Chernobyl type."

"Passive" protection during emergencies differs in principle from "active" systems used in reactors of the VVER and RBMK type in operation in that it is incorporated into the basic elements of the design itself, while "active" protection systems go to work when the automatic equipment is turned on or else they require the intervention of the operations personnel. For the first time in Russia a dual protective shell is applied at the plant, and, additionally, it uses the building of the VVER-1000 reactor installation, which is intended for a much greater maximum capacity than the reactor of the new NP-500 nuclear power plant (640 megawatts). In the words of the project's leader, deputy head engineer of Atomenergoprojekt, Iosif Kukhtevich, the level of safety of the NP-500 is one order of magnitude greater than the indicators of nuclear plants operating in the CIS. The plant's projected service life is 50-60 years, which is twice as long as that of existing plants with reactors of the VVER and RBMK type.

The new design was developed by the Atomenergoprojekt Institute (St. Petersburg) in conjunction with the Hidropress design bureau (Podolsk) and the Russian scientific center Kurchatovskiy Institute (Moscow).

The Atomenergoprojekt Institute of the Ministry of Nuclear Energy of Russia is carrying out comprehensive designing of nuclear, thermal, and gas turbine electric power plants. About 90 electric power plants of various types have been built according to their plans in Russia and the republics of the former USSR and 23 have been built abroad.

Similar designs using "passive" protection are being developed in the United States, Sweden, and Japan. The closest analog to the NP-500 is the design of the AR-600—a joint development of the Westinghouse and General Electric firms (United States), and Toshiba and Mitsubishi (Japan).

The first block of the new type of nuclear power plant is to be constructed within the framework of the complex of the Northwestern Scientific Industrial Nuclear Energy Center in Sosnovyy Bor. Taking into account the procedure for obtaining a license from the Gosatomnadzor, the startup of the first block, in the opinion of its developers, is possible by the year 2000.

Telephone of the Atomenergoprojekt Institute: (812)277-21-96.

Government To Examine Food Reserves, Nuclear Power Plants

OW2412132992 Moscow INTERFAX in English
1315 GMT 24 Dec 92

[Following item transmitted via KYODO]

[Text] The Russian Government held a session on Thursday under the chairmanship of Prime Minister Viktor Chernomyrdin to address the issue of "Formation of Federal State Food Reserve in 1993".

The press center of the Russian Government informs that the Economic's Minister, Andrey Nechayev, who was the main speaker at the session, said that his ministry has already drafted a presidential decree in that regard. Mr Nechayev indicated that with the consideration of the government's actual opportunities to purchase imported food products, the allocations of foodstuffs from the federal reserve to their consumers will be lower than those in 1992 by about 30 percent.

Andrey Nechayev noted that the food reserve is intended to meet the needs of certain categories of the Russian population who reside on the territories that either cannot produce some of the foodstuffs on their own or have limited opportunities for their production and are unable to sustain themselves without assistance from the government. In particular, he was speaking about the armed forces, the Far North regions, as well as the cities of Moscow and St. Petersburg.

INTERFAX has learned that Mr Nechayev also revealed Russia's intention to purchase abroad 16 more million tons of grain including 3 million tons purchased from Kazakhstan.

Prime Minister Chernomyrdin proposed, in the meantime, to coordinate with the regions the issue regarding the food reserve.

According to the information available at INTERFAX, the participants of the session also discussed the program of construction in Russia of nuclear power plants in 1992-1995. During this period, Russia is expected to put into operation three power units of 1000 MWt [megawatts] each, as well as conservation of some of the power plants which need to be shut down and refurbished for ecological reasons or under the pressure of the regions where they are situated.

Number of Incidents at Nuclear Power Plants Increases

LD0601184893 Moscow ITAR-TASS in English
1636 GMT 6 Jan 93

[By ITAR-TASS correspondent Veronika Romanenkova]

[Text] Moscow, January 6 (TASS)—There were 205 incidents at Russian nuclear power plants in 1992 compared to 172 in 1991, according to Anatoliy Zemskov, deputy head of the "Rosenergoatom" concern.

174 incidents were acknowledged as zero-point according to the international 7-point Ines Scale. 28 one-point incidents and three second-point ones were registered last year, he told TASS on Wednesday, adding that no accidents occurred at the plants.

Among the major reasons of the incidents Zemskov listed faults in construction, equipment and low training level of the personnel.

The issue of safety remains the key one in 1993. The creation of reactors of a new type is main the task which Russian experts are working on, he stressed.

Several reactors were reconstructed and modernised in 1992 in order to increase their safety, however, the repair work resulted in a drop in production, Zemskov said. In 1992 nine Russian nuclear power plants produced some 120 billion kwh of electricity which is a little less than in 1991, he added.

Further Development of Nuclear Power Planned

PM1301142193 Moscow ROSSIYSKIYE VESTI in Russian 13 Jan 93 p 3

[EKOTASS report under the "News" rubric: "Construction of Nuclear Electric Power Stations Will Be Continued"]

[Text] Russia does not intend to abandon the construction and planning of new nuclear sources of energy. Work will be continued in 1993 on construction of the Balakovo AES [nuclear electric power station], consisting of four reactor units, and of the third and fifth reactor units at the Kalinin and Kursk AES's, and work will be completed on the construction sites of the Smolensk and Kostroma AES's. During the period from 1993 through 1995 large-scale feasibility studies will be conducted with regard to the possible siting of "nuclear sources of electricity" on the territories of the Far East, the Far North, the lower Volga region, the North Caucasus, and the central part of Russia.

Continuation of Nuclear Construction Program Debated

Industry Spokesmen Defend Decision

93WN0251A Moscow ROSSIYSKIYE VESTI in Russian 23 Jan 93 p 5

[Article by Valeriy Marchenko and Nikolay Myakinnik published under the general heading: "The Government's Position: Construction of Nuclear Power Stations Will Continue": "Energy Professionals' Opinion: The 'Greens' Push the Energy Sector Towards the 'Red Line'"]

[Text] The government of the Russian Federation has adopted a decree on the development of nuclear power generation which envisages continuing the building of AES [nuclear power stations] on the territory of Russia. In particular, this involves the construction of four generating units at the Balakhovo AES and one generating unit each at the Kalinin and Kursk AES.

In addition, in the near future proposals will be considered as to the time frame of the possible additional construction of a sixth generating unit at the Voronezh heat-supply nuclear power station (AST) and construction of a new AES at Yuzhno-Uralsk and Beloyarsk. It is envisaged that before summer 1995 the lead generating unit of a new-generation nuclear power station will be put on line at Sosnovyy Bor (near St. Petersburg), which will be constructed on the basis of the Leningrad AES.

It is also envisaged to conduct technical and economic research and project development for a number of AES on the territory of the Far North and the Lower Volga Area. Financing for capital investment for a number of these projects was already appropriated last year, 1992.

The "greens" are on the offensive everywhere. The effect of their actions, however, is the same as from the "scorched earth tactic." They came, they criticized—it did not help; they made a scandal—and finally got their way: the facility was closed. Afterward—who cares! For instance, the "greens" are capable of blowing the smallest incident at a nuclear station into a mind-boggling catastrophe; the conclusion is even more frightening: Let us destroy nuclear power generation in principle.

It has been noted many times that the "greens" are often imprecise and untruthful in their statements and evaluations. Take for instance the statement—with reference to the IAEA [International Atomic Energy Agency] at that—that there is a 27 percent probability of a serious accident at one of the obsolete Russian reactors. And immediately contending that allegedly all our other reactors are dangerous and declaring them unfit for any reconstruction. This is at a time when the IAEA does not accept such a position, considering the aforementioned figure frivolous. Leading specialists are against the direct use of these kind of probability evaluations for populist purposes. By the way, international commissions also note the good quality of our reactors.

Another noticeable trait is that in addition to the errors and truth-stretching that are characteristic of the conclusions and the very activities of the "greens," their propaganda efforts also show certain one-sidedness, aimed exclusively at destruction. As a rule, they persistently attempt to incite the public, to convince it (not by orderly arguments but by whipping up radiation phobia) of the perilous consequences of developing nuclear power generation; to present scientists' efforts in this direction in a negative light. If we look carefully at the situation in the energy sector, however, we come to the conclusion that we cannot do without AES's. The world's industrially usable deposits of oil at the current level of

consumption will last only about 30-35 years; gas and coal—150-300 years. These are the commonly known data supplied by the International Energy Congress.

Or take another side of the problem—environmental pollution, and the heat effect from burning oil and coal. This is the worst disaster known to any environmentalist—because of the carbon dioxide released during the burning of organic fuels. Specialists believe that it would be madness to replace existing nuclear power stations with coal-fired or some other type.

From all points of view, nuclear power generation is preferable. Uranium deposits are sufficiently large. Nuclear reactor design is continuously being perfected. And, most importantly—with the proper reactor design, responsible utilization, and safe storage of nuclear waste, which is quite realistic, nuclear stations today represent one of the most ecologically clean energy sources.

If we give up on AES's, we will face the necessity of burning all our mineral fuel, then cutting down our forests. There will be no other sources except for them, especially in the North.

This is the dismal prospect awaiting us unless we immediately begin to undertake large-scale construction of nuclear power stations, lift the freeze on construction of hydroelectric stations, and multiply our efforts to create wind power devices.

The desire to create ecologically clean power stations is natural, but the goal is hard to achieve. Meanwhile, the real level of technological progress forces us to study the effects of radiation on biological objects.

In the opinion of Professor Ye. Burlakova of the Physical Chemistry Institute, there are substantial differences in the way radiation affects people. The variations of these differences does not fit at all within the boundaries of the old perceptions. The conclusion that 20-23 percent of observed subjects have very high resistance to radiation provides food for thought. In other words, they can take a dose of radiation that is 100 or more times higher than the maximum allowable level, and after that regenerate quickly and have offspring.

Of course, such knowledge can and should have practical applications. For instance, in selecting people for training for the complex job of operator, who, of course, should not lose his ability to function at the first accidental rise in radiation. Undoubtedly this is a must in forming repair-and-rescue groups, which operate in inherently dangerous conditions. One can safely rely in an emergency situation on people capable of enduring extreme doses of radiation.

The desire to keep reality in perspective inevitably leads to a solution to one more problem. Since the environment cannot be completely rid of pollution—we would have to bring the entire industrial sector to a halt to achieve that—we need to pay more attention to human biology. We should be working on methodologies that

could help people increase their body resistance to the impact of a polluted environment. Many specialists believe that the biological potential of a man in resisting many forms of environmental changes, including increased radiation, can be increased.

The "greens" simply have to take the position of common sense. Otherwise they will not be realistically able to help humanity make the world green. While the economy will be forced off the road of progress, creating a precedent of an unheard-of economic crisis on a world scale.

Presidential Ecology Adviser Responds

93WN0251B Moscow ROSSIYSKIYE VESTI
in Russian 23 Jan 93 p 5

[Article by Aleksey Yablokov, adviser to the president of the Russian Federation, published under the general heading "The Government's Position: Construction of Nuclear Power Stations Will Continue": "An Ecologist's Opinion: 'Nuclear Scientists Turn Deaf Ear to Alternative Solutions'"]

[Text] The decision to proceed with construction of new nuclear power stations and generating units was made without conducting a state economic [as published] expert evaluation. This violates legislative norms gained with such difficulty in the battle with government agencies after the Chernobyl disaster. The law envisages that "state ecological expert evaluation represents a mandatory measure with respect to protection of the environment, and precedes the making of an economic decision." Further on—"financing and commencement of work on all projects and programs is done only if the conclusion of the state ecological expert evaluation is positive." What immediately follows from this is that the decision to order the Ministry of Finance to initiate financing for these projects before conducting an ecological evaluation is unlawful.

Of course, the law also stipulates that building AES's [nuclear electric power stations] in densely populated areas, resort and rehabilitation zones, and near water reservoirs of republic-level significance is prohibited. If necessity dictates such construction, the decision is made upon holding a referendum.

Thus, the law even prohibits **designing** the stations, the decision on whose construction has already been made. One would think that the minister of environmental protection, Viktor Danilov-Danilyan, would be the first to speak up against adopting this decree. Strangely, however, he concurred. Only Minister of Justice Nikolay Fedorov supported me in that the adopted decree violates the law. Unfortunately, our opinion was disregarded.

I am not saying that I doubt the need to develop nuclear power generation. But the risk undertaken in building AES's must be an acceptable one. The way to go about it is to consider on a competitive basis a number of designs

for new safe reactors and only upon conducting a state ecological expert evaluation decide whether they are to be built. Also, why is it necessary to replace capacities going off line by new AES's and nothing else?

Is it not better to use the potential of the VPK [military-industrial complex] conversion? For instance, as some specialists, including myself, propose—using gas turbines. A special commission has been created to deal with such alternative solutions, but it has not met even once yet. We could bring economists and defense specialists into the search for solutions to this problem—people who have told me many times that there are designs that will cost the state two or three times less than building AES's. They had gas turbines in mind. However, those who were given the money "for further development of nuclear power generation" turn a deaf ear to such alternative solutions.

I must also mention the technical violations in the operation of AES's that continue to take place. For instance, on 22 December an incident occurred at the Beloyarsk AES that was rated as a "category one" accident. In the past there was a hidden radiation discharge at the same station. This came through in the results of measurements of radioactive pollution on the territory of Russia conducted from a helicopter in 1991. On the map below you see a spot indicating contamination of an area equal to almost 20 square kilometers. The level of radioactive contamination is between 15 and 5⁻³ curies per square kilometer. This data is evidence that a radioactive accident took place resulting in a discharge of enormous concentrations of cesium and cobalt. We did not learn about it until now, though, when a rigorous survey was conducted (the helicopter flew over this spot three times). Thus, the incident at the Beloyarsk AES is already the second one.

Today the Ministry of Atomic Energy won a battle against the ecologists. Over whom is this victory won, however; why do we so seldom look into the future? Now the Ministry of Atomic Energy's hands are untied. The Supreme Soviet Presidium resolution on increasing secrecy in the area of nuclear power generation also "works" for it. From now on all archive documents will be classified for 18 years.

I am convinced, however, that the energy problem can also be solved in other ways. The military-industrial potential that was "eating up" a large share of energy is being substantially reduced. Keep it in mind that 75 percent of enterprises in St. Petersburg alone worked for the VPK.

This means that by cutting the VPK we can substantially moderate the "appetite" for energy. And what about financing for these projects? The implementation of the program's first phase alone will cost at least 20 billion rubles. I am convinced that we can hardly spare this money. Especially considering that economists keep saying persistently that large-scale financial investment should only be made in projects that will have a fast

economic effect, and provide a return that will make it possible to improve the life of Russian citizens.

Power Plant 'Incidents' Noted

93WN0251C Moscow ROSSIYSKIYE VESTI
in Russian 23 Jan 93 p 5

[Unattributed report: "Accidents at Russian Nuclear Power Stations Between 11 and 18 January 1993"]

[Text] There are currently 28 power generating units operating at nine AES's [nuclear electric power stations] that are on line in Russia, with a total capacity of more than 20 megawatts. Last week, generating unit No. 4 at the Novovoronezh AES, and generating unit No. 1 at the Kalinin AES (both stations are located in Central Russia) were under repair, as was generating unit No. 2 at the Leningrad AES. Generating unit No. 1 at the Smolensk AES is under capital repair, and generating unit No. 3 at the Kursk AES—under scheduled repair.

The following incidents took place at Russian AES's: On 11 January, due to short circuit a turbogenerator was turned off at generating unit No. 5 at the Novovoronezh AES; the generating unit's capacity was reduced by 50 percent. The turbogenerator was returned on line after a little over an hour.

On 14 January the emergency safety system kicked in at generating unit No. 3 at the Balakovo AES (Volga region). The unit was put on line on 15 January.

On 15 January the output of generating unit No. 1 at the Kalinin AES was reduced to 100 million watts (the station's capacity is 2,000 million watts); the same day, the generating unit was put under capital repairs.

On 16 January a turbogenerator was turned off at generating unit No. 5 of the Novovoronezh AES, due to unsatisfactory repairs to the emergency safety system. The turbogenerator was turned back on the next day.

Physicist: Nuclear Safety Feasible

93WN0251D Moscow ROSSIYSKIYE VESTI
in Russian 23 Jan 93 p 5

[Article by Professor Yuriy Ado, chief research associate at the High Energy Physics Institute, Protvino: "A Physicist's Opinion: Nuclear Power Stations Can Be Made Safe!"]

[Text] There are issues in science that willy-nilly affect the interests of everyone and everybody. Such is the AES problem. On one hand, the operation of AES's does indeed involve the risk of an environmentally dangerous situation of varying degrees of gravity. It is understandable that we hear increasingly frequently the opinion that we should abandon building and operating AES's. On the other hand, such an approach to the problem cannot be considered constructive. Given that we have not yet found well-founded options for adequately replacing nuclear stations with some other kind of energy sources,

instead of talking about closing AES's we should concentrate on their substantial improvement, which would preclude the causes of accidental nuclear reactor acceleration. There is a known way of doing this.

The main cause of known major AES accidents is that all active AES nuclear reactors operate in a critical mode. A control and safety system failure or an operator error may result (and, alas, do) in the chain reaction of nuclear fissionable fuel becoming uncontrollable, accelerating quickly, and instantly discharging large quantities of heat energy sufficient to cause the explosion of the reactor. There is, however, a method of transferring a nuclear reactor to a near-critical status, in which a chain reaction cannot take place spontaneously. At the same time, the reactor's nominal capacity may be restored by additional irradiation of the reactor's active zone by a powerful neutron flux from an outside source.

The needed intensive neutron flux can be adequately generated by using a proton, heavy water, or other, heavier, charged particle high-current accelerator. Calculations show that, for instance, a proton beam from an accelerator with an energy capacity of about 400 million electron-volts and an average current of about 100 milliampere, "bombarding" a uranium or lead target, can easily produce the required neutron flux. As to building such accelerators, this task is now feasible. It is important to note that the search for the solution to this task is approaching a border area where two problems, two technologies meet—accelerator and reactor technology; as is known from the history of science, such solutions are very productive.

Estimates show that after the AES is equipped with the accelerator device, the cost of the electric power it produces increases by 10-15 percent. This is not too high a price to pay for the ability to practically preclude accidents on a catastrophic scale.

Seminar Explores Options for Plutonium Disposal

93WN0244A Moscow KOMMERSANT-DAILY
in Russian 17 Dec 92 p 8

[Article by Dmitriy Kadosov: "Conference on Nuclear Energy: Nuclear Specialists Discussed What To Do With Plutonium"]

[Text] An international seminar on problems of processing nuclear fuel and the study and use of plutonium for energy and weapons ended yesterday. Two main problems were discussed: Whether to bury or to process spent nuclear fuel containing plutonium, and what to do with the plutonium in nuclear warheads of dismantled missiles. The opinion of the scientists and experts regarding these issues will be submitted to the Russians by the legislators who organized this seminar.

Specialists of the Ministry of Nuclear Energy of Russia and a number of scientists think that spent nuclear fuel from nuclear energy plants should be processed, separating it into uranium, plutonium, and radioactive

wastes. Throughout the world this kind of processing is done at special radiochemical plants. But in Russia there is only one such plant in operation and it is included in the Chelyabinsk Mayak Combine. The plant's capacity makes it possible to process up to 400 tonnes of spent fuel from reactors of the VVER [water-cooled, water-moderated atomic energy reactor] type, which were installed at many plants of the former USSR, the countries of Eastern Europe, and Finland.

In world practice the cost of this processing, which includes returning the uranium, plutonium, and hardened (vitrified) radioactive wastes to the client country, is \$1 million per tonne. Such services are rendered by France, where such a plant is in operation and two more are being constructed—with a capacity of 800 tonnes per year each. Powerful processing plants will be put into operation in Great Britain (1993—1,200 tonnes per year) and Japan (1997—800 tonnes per year). Russia has begun construction of a second processing plant in the region of Krasnoyarsk. But the population of Krasnoyarsk and Chelyabinsk have a negative attitude toward the operation of local radiochemical plants.

The suggestions of American specialists amount to saying that the spent fuel should be buried deep without any kind of processing. Nonetheless the possibility of reliable long-term burial has never been realized anywhere in the world so far. The Americans' main conclusions can be reduced to the idea that when fuel is processed plutonium is separated and the problem of storing and salvaging it has not been solved. Subsequent use of plutonium as fuel is possible only in so-called rapid neutron reactors, which have not been widely used so far.

Specialists of the Ministry of Nuclear Energy link the future of nuclear energy in Russia to the use of plutonium and the creation of a closed nuclear cycle. In their opinion, the modern level of technology makes it possible to provided for guaranteed safe storage of plutonium for several decades.

Materials from the seminar will be sent to the Supreme Soviet committee for questions of ecology and efficient use of natural resources to be used in preparing a law on state policy in the area of radiation safety.

Investigators Target Sale of Radioactive Materials

93WN0221B Moscow IZVESTIYA in Russian
25 Dec 92 Morning Edition p 7

[Article by Lidiya Ivchenko: "Radioactive Through Their Own Negligence"]

[Text] "In the cities of Izhevsk and Glazov, security agencies and units of the State Sanitation and Epidemiological Inspectorate confiscated from private individuals nearly 95 kilograms of uranium-238 that had been stolen from the Chepetskiy Mechanical Plant. Measures are being taken to establish the identity of persons who came into contact with the uranium and to set up

medical observation." "While conducting a gamma-radiation survey of Barnaul, employees of the Berezovskgeologiya enterprise discovered a source of radioactivity in the form of reflecting markers, emitting a dose of 35,500 of microroentgens per hour, on a Moskvich automobile, No. 1773 AB."

The Russian Federation Sanitation and Epidemiological Committee receives reports like this by the dozen. In one place, a school was contaminated by gifts presented by a sponsoring enterprise—instruments that contained sources of radioactivity. In another place, reflecting identification markers on trucks bought from a military unit "glow" in such a way that measuring instruments go off the scale. Through ignorance and negligence, people are adding new contamination sites to the radioactive anomalies present in all major cities and vacation areas, and it sometimes takes a considerable amount of time and a lot of money to clean them up.

"First of all, there exists natural radiation, which scientists are studying," said G. Perminova, chief of the State Sanitation and Epidemiological Committee's radiation safety department. "It has been noted, for example, that background gamma radiation is higher in areas of oil extraction and near oil storage facilities, where radon emerges from the earth's depths along with the oil. The mechanism of radon emission and its accumulation in residential buildings has not yet been studied. Natural radioactivity is present in certain construction materials, and we therefore require that enterprises that mine such materials check them for radioactivity. But unpredictable, spontaneous sources often appear. The system for burying radioactive wastes came about long after people started working with such substances. No longer usable instruments that contain sources of radioactivity have been discarded in basements or right on the grounds of enterprises or research institutes. In some instances, they have been pilfered on account of the presence of some sort of valuable components."

In Moscow, trash dumps containing sources of radioactivity were found on Baltiiskaya Street, where an institute was once located, on Festivalnaya Street, near the 1905 Street subway station, and on the grounds of several enterprises—more than 100 contamination sites! Urgent measures were taken immediately. The areas were decontaminated by a special unit of the Radon Combine. Now there are only a few such local sites of radioactive contamination—the most "innocuous ones"—and they are being cleaned up as well.

With systematic, well-organized monitoring of local background gamma radiation (this work is performed by agencies of the Russian Federation Ministry of Environmental Protection and Natural Resources), it is not difficult to find anomalies. It is much harder to prevent the "spread" of radioactive contamination to a large number of unforeseen locations. A strong source of radioactivity was found accidentally by a resident in an apartment building on Vasilyevskiy Island in St. Petersburg. The people were quickly moved out. An inspection

revealed radium under the floor. How did it get there? No one knows. One possible way is scrap metal, slag from the remelting of which is used in making structural elements. Radioisotopic instruments have been known to make their way into scrap metal. This is why it is so important to check initial raw materials for radioactivity. There is a special government decree to this effect.

The sanitation inspectorate is very concerned by the growing use of military equipment and hardware in the civilian economy. Today, as a result of conversion, military equipment can be purchased directly by any cooperative. And here are the initial results: The Novyy Cooperative in Moscow bought a ZIL truck from the military with reflecting identification markers that were radioactive. Specialists at the ZIL Plant said that trucks are not equipped with such parts at the plant, and that the sources of radioactivity could have come from missile and artillery units. Moscow's Radon Scientific and Production Association discovered 1,400 of these reflecting markers used by the army in Kaliningrad, Moscow Oblast!

"This is why we are urging all potential buyers of military equipment to demand a certificate of radiation safety," officials of the Sanitation and Epidemiological Committee told me. "And if someone happens to receive a gift of instruments from a sponsoring enterprise, look that gift horse in the mouth."

Activities of 'Radon' Nuclear Waste Facility Profiled

93WN0221A Moscow NEZAVISIMAYA GAZETA
in Russian 26 Dec 92 p 6

[Article by Dmitriy Frolov: "Moscow's Radioactive Wastes: It Will Soon Be Impossible Not To Notice Problems With Them"]

[Text] Amateurs usually confuse everything all the time, while professionals, with unwavering stubbornness, take this close to heart and are very offended. When environmentalists call the Radon enterprise a "nuclear waste dump," people there categorically refuse to agree with that label. At issue is an installation located about 20 kilometers from Sergiyev Posad, to which wastes are brought from the capital, its oblast, and eight other oblasts.

Caravans of trucks have made their way here almost every day for more than 30 years, since 1961, along a barely noticeable paved road that turns off from the main highway and into a forest and is marked only by an "off-limits" sign. The waste facility is also at the receiving end of criticism from the "Greens," who protest its location in a densely populated area.

"First, we do not have a waste dump here, much less a nuclear waste dump," said Sergei Dmitriyev, deputy research director of Radon. "This is an enterprise for the so-called treatment and storage of radioactive wastes from enterprises that are not connected to a fuel cycle.

We do not process or store nuclear wastes, such as fuel elements and other fissionable materials. Strictly speaking, such highly radioactive objects cannot be called wastes, because they can be reprocessed to produce plutonium. We have no long-life or highly radioactive materials here."

It must be said that longevity in this instance is a relative notion. The decay period for such "short-lived" materials is between 30 and 300 years. The latter—the most radioactive—come from numerous research institutes equipped with nuclear reactors. In Moscow, these include, without a doubt, the well-known Kurchatov Institute, and several others that are not as well known but equally burdened with radioactive wastes. Until 1961, they were stored or buried—depending on local preference—on the facilities' own grounds. At the Kurchatov Institute, for example, materials were first buried in the early 1950s. It is very obvious that at that time, notions of radiation safety were quite different from those we have today.

A special storage facility has now been built at Radon for these wastes. And although by world standards, its level of equipment is not perfect, the state of the containers in special underground shafts can be readily monitored. The problem, however, is that the storage site has essentially reached the end of its service life. But the stream of radioactive materials destined for it is not going to stop any time soon.

In general, the plans called for a 30-year service life for all near-surface storage facilities. Six modernizations were able to extend it for another 20 years.

But storage isn't the only concern at Radon; there is also the aforementioned "treatment." That is the name used here for the process of reducing the wastes to the smallest possible volume and enclosing them in a protective covering that offers maximum protection against contact with the outside environment. Radon has an entire production facility for all this, where the wastes are filtered, compressed, bitumenized, encased in glass and, when possible, incinerated.

Up to 3,000 cubic meters of wastes arrive here each year. On a videocassette used for presentations, the caravan of orange trucks, escorted by special patrols with flashers, looks impressive. However, this impression is somewhat false, considering that when we had to cover the same route, our car kept plunging into numerous mud-filled potholes up to the exhaust pipe. But in the final analysis, how pretty all this looks is not important; much more important is the degree of safety of these shipments.

"We have full confidence in that," said Sergey Dmitriyev. "The cargo is fastened down tightly and protected by multiple safeguards. The problem lies elsewhere. Although these shipments are very expensive, we charge a ridiculously small fee—50 kopeks per kilometer—from the enterprises and institutes, of which there are a great many in a wide variety of fields, including hospitals where X-ray equipment is used. When we

raised the fee by a small amount, the volume of incoming wastes declined. On the other hand, we started find some wastes at city dumps.

"For me, the most surprising thing is that the environmental activists are opposing what is in effect an enterprise that protects the environment. They criticize Radon for being located in a densely populated area near the capital. But this is where 2,000 organizations that produce 75 percent of Russia's total waste volume are located. This site was not chosen haphazardly, but only after lengthy studies of the soils' geological structure. We are standing on a unique and extremely strong layer of clays from the Quaternary Period, which extends 70 meters down to the first water-bearing level.

"As for emissions, they are easy to monitor. And the health statistics for our personnel speak for themselves: The mortality rate is 30 percent below the average Russian level, and the birth rate is 30 percent above that average. The incidence of cancer is also below other areas of the region."

The latter circumstance is indeed curious, since it is utterly unclear just how Radon has managed to create its own oncological microclimate—and the very best one at that. But this is sooner a question for the Third Medical Administration, which has jurisdiction over the local medical and sanitation units and is the source of the aforementioned statistics.

It is much more important to figure out just what Moscow is going to do with its highly radioactive wastes, considering that the storage site is full. For the capital contributes 85 percent of all the materials that come to Radon.

Russia's Kurchatov Institute research facility, which produces one to two containers of wastes every day, has returned to its previous practice: It is building a new storage facility on its own grounds. The situation is more difficult with respect to older storage sites left over from the Soviet atomic project—existing documentation does not make it possible to determine exactly what lies where.

"In any case, there are several factors that raise questions." That's how Aleksey Borokhovich, the center's deputy executive director for ecology, characterized the situation. "The most important thing is that in 1996, we'll have to stop and figure out what to do next—the reactors are reaching the end of their service lives. There is still no procedure for taking them out of service."

It is not known if new reactors will be built at the institute, but specialists are unanimous in saying that a mothballed reactor requires even more attention, and so in any case the Kurchatov Institute is not going to become deserted and abandoned. But the problem of what to do about all this down the road will remain. Especially considering the fact that, as mentioned above, there are reactors and storage facilities in other parts of Moscow as well.

Tomsk Action Group Protests Plan for Nuclear Dump

PM1301112193 Moscow ROSSIYSKAYA GAZETA in Russian 12 Jan 93 First Edition p 8

[Unattributed report: "Tomsk Residents Say 'No'"]

[Text] More than 15,000 signatures have been collected in Tomsk against the construction of a nuclear waste dump at Tomsk-7.

The mass media in Tomsk have disseminated a statement by the Tomsk State University action group which has initiated a campaign against the dump's construction. The statement, signed by Action Group Chairman Nikolay Derevnaya, claims that the main aim of the Russian Federation Ministry of Atomic Energy is to process plutonium and semi-enriched uranium in the Siberian Chemical Combine at Tomsk-7.

According to a report by Nikolay Derevnaya, the wells for the water supply providing Tomsk with drinking water are situated 15-20 km from the Siberian Chemical Combine. The document says that geologists and hydrologists assert that there is a possibility that the radioactive waste may get into the region of the water supply. According to Nikolay Derevnaya's information, because no continuous monitoring of the level of radioactivity in the drinking water is being carried out, the whole of Omsk's population could be poisoned in an instant through an accident.

Radioactive Sources in Khabarovsk Will Be Registered

LD0601091093 Moscow ITAR-TASS in English 0834 GMT 6 Jan 93

[By ITAR-TASS correspondent Yuriy Vitrishchak]

[Text] Khabarovsk, January 6 (TASS)—Places where radioactive substances are produced, used or buried will henceforth be subjected to special control in Khabarovsk territory. The registration of such places, as well as of sources of ionising radiation, is now under way there.

Special verifications are being conducted at all enterprises, institutions and military units, irrespective of their subordination or form of ownership, where radioactive substances are being used for this or that purpose.

There was every reason to take such measures in the territory. Selective checks, carried out earlier, have brought to light 52 places with a heightened level of radiation. There was at least one spot of radioactive pollution per two square kilometres of checked territory in industrial towns. More than one thousand unrecorded sources of ionising radiation were rendered harmless at schools, higher educational establishments and research institutions.

Europarlament Delegation Visits Chelyabinsk-65

PM1201110193 Moscow PRAVDA in Russian 10 Jan 93 p 2

[Report by Aleksandr Belozertsev: "Waiting Three Years for What Was Promised"]

[Text] Chelyabinsk—A European Parliament delegation has arrived at the Russian nuclear scientists' center of Chelyabinsk-65. The guests have been shown the city, hitherto closed to our compatriots, and the formerly top-secret plutonium production facility and were told of the "Mayak" chemical combine workers' achievement: Since they started work they have "sealed" in glass 100 million curies from radioactive waste.

This occurred on New Year's Eve and became a kind of gift to the people who are rehabilitating the territory which suffered during the thermal explosion of nuclear waste in the fall of 1957. For the first time a situation has been reached where more waste has begun to be processed than is being brought in here.

There is no doubt that it was not only the European parliamentarians who were pleased to hear this. The likelihood of a repeat of the 1957 nuclear accident, no less serious than the Chernobyl accident in terms of its consequences, is considerably reduced. But no one told the eminent guests nor the journalists accompanying them that the South Urals people have still not seen the billions of rubles for treating the sick and rehabilitating the polluted land promised by Russian President B. Yeltsin during his election trip to the Chelyabinsk nuclear center in June 1991.

Arkhangelsk Conference on Arctic Ecology, Disarmament Detailed

93WN0171A St. Petersburg CHAS PIK in Russian 10, 16, 23 Nov 92

[Article in three installments by Lev Korsunskiy (Arkhangelsk-St. Petersburg): "Novaya Zemlya—The Arctic Chernobyl"]

[No 45, 10 Nov p 3]

[Text] Since 1955, 132 underground, underwater, and surface nuclear tests have been conducted on the archipelago. The energy released by these bursts (273 megatonnes) represents 94 percent of the combined yield of all of the nuclear tests conducted in the USSR. We should recall that Hiroshima was destroyed by an atom bomb with a yield of only 15 kilotonnes.

'Military Advertisement'

This is what Bjorn Okern, a Norwegian member of the international ski team making the crossing from Varandey to Novaya Zemlya, said about the data received from Rear Admiral Viktor Gorev, chief of the nuclear test range. Although the skiers were not allowed onto the territory of the test range or even into the

residential compound, and the "master of the archipelago" had to come outside the gate to talk to the long-distance travelers, the admiral nevertheless advised the Russian and foreign citizens to "describe the state of affairs in Novaya Zemlya accurately." In compliance with the rear admiral's request, we are publishing these facts and figures on Novaya Zemlya.

Total area of archipelago—81,300 square kilometers. **Population**—a garrison of thousands plus 2,146 officers' wives (mostly unemployed), 1,009 children of school age, and 225 pre-schoolers. Some 170 married officers and 130 warrant officers have no apartments of their own.

Available housing (excluding barracks)—30 residential buildings and five hotels, two schools and two pre-school establishments.

Business and services—the first tests of nuclear weapons were conducted in 1955 in Chernaya Cove. At that time the families of Russian fur trappers and Nenets hunters of sea animals were still living on Novaya Zemlya. In 1961 the most powerful nuclear weapon in the whole history of these tests, a 58-megatonne thermonuclear bomb, was set off above the archipelago. The weapon was developed under the supervision of Academician A. Sakharov and assembled at the Kommunist Experimental Plant in Arzamas-16.

Since the time the test range was opened 36 years ago, 132 nuclear tests have been conducted there. Orders and medals of the USSR were awarded to 1,250 individuals, including the Order of Lenin to 18 of them.

Radiation conditions (according to the data of the chief of the test range): "There are localized zones on the islands of Novaya Zemlya with a high level of pollution resulting from the radioactive products of earlier nuclear underwater, water surface, land surface, and low-altitude air bursts. These zones are strictly localized and are at a distance from the locations of human habitation. The gamma radiation dose at this time does not exceed 1 mr/hr.

"The nuclear underground bursts that have been conducted (since 1964) have not made a perceptible contribution to the radioactive pollution of the region."

Radiation conditions (according to the data submitted to the Russian Federation Supreme Soviet by the St. Petersburg Scientific Research Institute of Radiation Hygiene): "A few dozen local regions with a high radiation background (up to 2 mr/hr), ranging from a few hundred meters to five kilometers in diameter, were discovered by specialists from the USSR Ministry of Geology during an aerial gamma survey of the southern island of the archipelago.

"Breaking through the blockade of criminal secrecy, in October 1991 people's deputies of the USSR Andrey Zolotkov and Aleksandr Yemelyanenko gave the news media information about the coordinates and a map of

radioactive waste disposal sites in the Arctic zone. More than 11,000 containers of radioactive waste and 15 damaged reactors from nuclear submarines and the ice-breaker 'Lenin' are submerged off the coast of Novaya Zemlya. Five of the reactors were submerged without unloading the nuclear fuel.

"Today the Northern Fleet has 20 submarines with nuclear reactors that are inoperable or have exceeded their service life."

'My Only Wish Is To See My Daughter's Grave Before I Die'

This statement was made on the first day of the international conference on "The Environmental Problems of the Arctic Zone and the Prospects for Nuclear Disarmament" by Olga Andreyevna Ledkova, the daughter of the first chairman of the island soviet, Tyko Vylka. Without waiting for the translation of her statement, the foreign guests rose to their feet along with other conference participants in a silent display of their support for this Nenets mother, who has been unable to fly from Naryn-Mar to Novaya Zemlya to visit the graves of her mother, three sisters and brother, and her son and daughter for almost four decades.

We will have more to say later about this tragic episode in the life of the natives of Novaya Zemlya, which is never even mentioned by the present masters of the archipelago, but now I want to tell you how we journalists, and everyone else who was carrying a video camera, still camera, or tape recorder, were asked to put them back in their cases and not take them out until we were given special permission. It was only because of the persistence of one of the organizers of the conference—journalist Aleksandr Yemelyanenko from SOBESEDNIK, the chairman of the "Onward to Novaya Zemlya" environmental movement, that officials from the military-industrial complex agreed to a single showing of two documentary films that have still not been seen by civilians in foreign nations, and certainly not by Russians.

I am still trying to shake off the terror that seized me while I was watching these films. How could anyone feel proud of the achievements of our science! National security cannot be measured by the size of the nuclear arsenal. It has to be judged by the health of the nation, by the quality of housing and education, and by economic successes. This is probably why the author most frequently quoted at the international conference in Arkhangelsk was one of the most famous wartime American generals, President Dwight D. Eisenhower of the United States: "Each gun that is produced, each warship that is launched, and each missile that is deployed ultimately robs those who are suffering from hunger and cold. The weapons community is not only spending money: It is squandering the energy of workers, the genius of scientists, and the hopes of children." This is a wonderful epigraph for any conversion program.

But let us return to the films. They were "The Test of a 50-Megatonne Pure Hydrogen Bomb" and "A Peaceful Nuclear Underground Burst in Yenakiyevo." What was frightening was not the mushroom cloud splitting the sky above Novaya Zemlya. We have seen enough of them. It was not the bomb suspended by parachute over the snowy silence of the archipelago, it was not the tanks and ships slated for destruction in the epicenter, and it was not the atomic tsunami that merged land, sky, and sea in a hellish spiral.... What was frightening was the voice of the narrator, steeped in optimism, as he commented calmly on the skill of the pilots, who quickly put on dark glasses after the superbomb had left the plane, on the selflessness and fine training of the members of the radiation monitoring crew, who arrived at the epicenter within 60 minutes, protected from the radiation by only a light-weight rubber suit, and on the inquisitive faces of the young soldiers, who immediately lifted their heads out of the underground shelters and looked into the invisible but harsh gamma rays....

It was then that the monitoring stations of the State Committee of the USSR for Hydrometeorology recorded a rise in the level of radioactive fallout in the northern regions of the country to two or three times the norm. And after this superbomb exploded, the maximum density of radioactive fallout in terms of total beta-activity in Amderma was 11,000 (!) times as high as today's background readings.

That film was apparently made for the members of Khrushchev's CPSU Central Committee Politburo: So much of the narration was devoted to the consolidation of the nuclear strength of the world's first state of workers and peasants and its leader at that time. The other film, which was made 18 years later, in 1979, and was also a paean to the general secretary, the brilliant author of "Malaya Zemlya" [Little Land], who had no pity for the big land, or for its people, who had been turned into laboratory mice.

Judge for yourselves: In September 1979 a nuclear underground burst was conducted in the Yuzhnyy Kommunar Mine right outside the city of Yenakiyevo. Why? To avoid unexpected methane emissions. The secret experiment was code-named "Cleavage." Yes, it was unique. It was the only one in the world. No nuclear power had ever set off a nuclear device in a densely populated region, and this is exactly what the Donbass was. Here is what the narrator had to say in the final scene of the film: "The morning after the peaceful nuclear explosion in the mine tunnel, the residents of Yenakiyevo calmly went to work and walked their children to kindergartens and schools...." In short, "and the city thought it was just a training exercise"....

The residents of Yenakiyevo did not know about "Cleavage" for two years, not until the tragedy in Chernobyl. When they heard about it, it was too late: Yenakiyevo was in the region contaminated by the Chernobyl plant. Radioactive surveys at that time revealed that there were spots of radioactivity everywhere in the city. The highest

readings, from 100 to 150 mcr/hr, were around Yuzhnyy Kommunar, where an experiment had been conducted in a working mine and on live human beings "for the confirmation or refutation of theoretical assumptions...." What kind of diabolical "mind, honor, and conscience of our era" did it take for this verification of "theoretical assumptions"?!

But let us return to Olga Andreyevna Ledkova, whose declaration brought the auditorium to its feet: "If I had wings, I would fly there, take a look around, and come back...." Pavel Balashin, the head of the Arkhangelsk Oblast administration, promised to help the daughter of the "first president of Novaya Zemlya" arrange for a flight to the archipelago, and he probably could not promise anything else, because the master of the archipelago is not the soviet, but the military council.

Past and Present

Almost 200 years before Khrushchev signed the secret decree of the CPSU Central Committee on 31 July 1954 and sentenced Novaya Zemlya—its nature, minerals, and unique fauna—to nuclear crucifixion, and all of its inhabitants to eviction, the 12 members of the dissident Paykach family moved to the archipelago in 1763. In his diary, Arctic researcher Fedor Litke recorded what he was told by the pilot of a Novaya Zemlya expedition who visited the spot where the dissidents had landed a year earlier: "...Suddenly he saw the whole Paykach family lying dead. They were dressed in white shrouds, but their bodies were black as coal. The spot has been called Chernaya [Black] Bay since that time...."

Today Chernaya Cove is one of the "quarantine zones" on the test range. The radiation background readings there (according to official data) are over 1,000 mcr/hr. Target ships tossed into the shallows by nuclear bursts near the cove were just recently swallowed up by the Kara Sea.

Are we unable to learn anything from history because "our courage makes us right"?

The cold winds of the "cold war" led to the creation of site-700 on Novaya Zemlya. This is what the nuclear test range is called in classified documents. The range earned the Order of Lenin for its diligence in 1974 and a Ministry of Defense banner "For Courage and Valor in Battle" in 1984, and it is still making preparations for the stepped-up conversion of the unique archipelago into a gigantic burial ground.

"That is impossible!" That would be the reaction of anyone who has read the ukase of the president of Russia of 18 October 1991, in which he announced the suspension of nuclear tests for a year and the closure of the test range on Novaya Zemlya. Furthermore, B.N. Yeltsin ordered the appropriate agencies to re-equip the test range and use the potential accumulated there for peaceful purposes.

It is unlikely that the general public knows that the president of Russia received a group of nuclear arms designers in his residence in the Kremlin on 21 January 1992. The meeting was held behind closed doors and lasted almost five hours. On 28 February 1992, after visiting Arzamas-16, B.N. Yeltsin denounced his own ukase of 28 October 1991. His new ukase was stamped "Not for Publication."

The agreement that was reached at the "last supper" in the president's residence and much more will be related in subsequent articles.

[No 46, 16 Nov p 3]

[Text] I ended the preceding report on my trip to Arkhangelsk (CHAS PIK, No 45, 10 November 1992), where, oddly enough, the only accredited journalist from St. Petersburg at the international conference on "The Environmental Problems of the Arctic Zone and the Prospects for Nuclear Disarmament" was from CHAS PIK, with the information that a presidential ukase stamped "Not for Publication" made its appearance on 28 February 1992. What was it that the president did not want the press to tell his people?

Comments of A. Veshnyakov, member of Russian Federation Supreme Soviet: "The ukase of 28 February 1992 was the complete opposite of the earlier one. It declared the need to continue the 'tunneling work' on the Novaya Zemlya test range, which is now called the Russian Central Test Range. The land of the test range became federal property. The president ordered the government to secure the operation of the range and its readiness to conduct from two to four tests a year when the moratorium is lifted. The president issued his ukase without consulting the Supreme Soviet of Russia or governing bodies in Arkhangelsk Oblast, where the test range is located.

"There was no limit to my amazement and the amazement of my fellow residents of Arkhangelsk! A decision which would seal the fate of not only this comparatively small region, but also of all of Russia and of the whole world to some extent, was made by just a few high-level officials. The implications of this are obvious: We have enough examples in our history."

Whereas the president's first ukase on the cessation of nuclear tests on Novaya Zemlya shocked Rear Admiral Viktor Gorev, the chief of the test range, after which he publicly described this decision as an act contrary to the public interest, the ukase of February 1992 delighted the nuclear military-industrial complex because surface tests were to be financed "as a separate item," meaning abundant and unsupervised spending. This means that people will continue to die from the plutonium and strontium rain that falls on the tundra moss, taiga, rivers, seas, and lakes after each burst on Novaya Zemlya.

The barrage of angry protests and complaints by residents of Arkhangelsk after the last underground test forced the military to lift the veil of secrecy over the

"terra incognita" just slightly. Here is what **Viktor Tolkachev, oblast soviet deputy**, and assistant editor of the Arkhangelsk newspaper VOLNA, had to say:

"Against all orders, test range personnel showed the visiting deputies and journalists their 'top-secret' business and made just one request: Write about it! There is the range, and there is the tunnel. Measure them, take pictures, take notes! The background readings on Novaya Zemlya are lower than in Moscow and Vorkuta. The range is ecologically clean....

"A document to this effect was even drawn up—so that the people would believe it, and this was soon followed by several calming statements and publications.

"But what was so hypocritical about all of this was that when they were talking about the normal radiation readings on the surface, few were bothered by the dozens of radioactive capsules deep inside the mountains—these time-bombs, set to go off in decades or centuries. They were not worried about the possible—or eventual!—leaks of radioactivity into the atmosphere or ocean. They were not worried about the impossibility—forever!—of ever living and working in these mountains again.

"At a meeting in the oblast soviet I asked Rear Admiral V. Gorev, chief of the test range:

"How long can you go on 'working' the hills of Novaya Zemlya?"

"For the rest of my life!" he replied with an ironic smile, and then he took an offensive tack: 'Do you have something against nuclear tests? Do you know that there are hundreds of American bases surrounding the Soviet Union? Do you know what kind of navy they have? And what about their arms program?'

"I felt terrible: All of this was true, so true.... But in addition to stripping the hills, might these tests not also strip men's souls?..."

The question of who will save the admirals' stripped souls is unlikely to bother the people who were evicted from Novaya Zemlya 34 years ago. The Russian trappers who moved to the mainland managed to survive and eventually acquired new skills and settled down, but the Nenets hunters who were torn from their native soil and who lost their income and their profession were never able to assimilate with the reindeer breeders. Their decades of silence were only an ostensible sign of their submission to fate. Their unspoken protests were dangerous, but only to them. Alcohol abuse, tuberculosis, syphilis, and suicide all led to the disappearance of a whole ethnic branch of the Nenets nationality, with its lifestyle, outlook, and linguistic distinctions.

Their elder Russian brother was also affected by the nuclear malady. On the advice of V. Tsaubulin, chairman of "Novozemeltsy," the Union of Test Personnel in St. Petersburg, I went to Georgiy Shukhtin Street in Arkhangelsk, where most of the buildings are occupied by

servicemen from Novaya Zemlya. If I had used a star to mark each dwelling where a former officer or warrant officer had lived and died after serving from 4 to 12 years on the test range, there would have been an incredible number of these funereal symbols. This is why the comforting reassurances of high-level officials who say that "radiological conditions on the islands of Novaya Zemlya are normal and pose no danger to the residents of the garrison, and certainly not to residents of other regions of our country," evoke such a vehement reaction from the men who once served on Novaya Zemlya. Tsaubulin said:

"No one has ever kept casualty statistics on Novaya Zemlya, but each year more and more of our colleagues die prematurely of cancer. And so many others have faulty immune systems!

"Incidentally, a "Novozemeltsy" convention will be held on the fourth floor of the Kalininskiy Rayon administration building on 21 November."

Medical experts from Arkhangelsk who spoke at the conference reported the distressing news that the people who are dying in local oncological hospitals today are those who set off the most powerful nuclear weapons in the world above and under the archipelago on the secret orders of the "fathers of our people." This was followed by information about another consequence of the pressure the military-industrial complex had exerted on the ecosystem. A group of Russian and Norwegian medical experts had discovered that 95 percent of the children born in Arkhangelsk Oblast today are in a weak or physically immature state, which is four (!) times as high as the figure right after the Great Patriotic War, in 1946. Women in Arkhangelsk Oblast suffer twice as many complications during pregnancy and delivery as women in Vologda Oblast. The rate of hematological disorders and oncological disease in children has tripled in the last three years here.

The dose of internal radiation passed along from moss to reindeer to man in the reindeer breeders of the Nenetsk tundra is 1,000 (!) times as high as the oblast average. The rate of oncological disease is also five times as high among the people of the tundra.

The most dire biblical prophecy has come true in the Arkhangelsk region: Man's insanity has damned the earth. The die has been cast: Sons are being punished for the sins of their fathers....

Here are a few more figures for the blindest and most nearsighted of us, who believe that Arkhangelsk and Semipalatinsk are too far away. These figures concern Mother Russia as a whole. We rank 32d in the world in life expectancy, and we rank close to 60th when it comes to the life expectancy of our children. Only one out of every ten Russian newborns is healthy. And we have 36 million chronic alcoholics in the country....

What should Russia do with its nuclear arsenal? The best minds, civilian and military, are pondering Hamlet's

question: Is there to be or not to be normal life on earth? The common belief is that the existence of nuclear weapons presupposes the existence of nuclear tests, but many scientists, and even some nuclear scientists, believe that methods of improving and storing nuclear weapons can be studied with the aid of precise theoretical models, and with no need to set off the weapons underground. I know something about nuclear technology and the way of life in restricted cities like Arzamas-16, and it seems to me that the military-industrial complexes in our country, in the United States, and in other nuclear powers are "feeding" each other with their improvements of their "common offspring"—the weapon of mass destruction.

Colossal teams of the best scientists in the country are attached to our nuclear potential, and we can understand the pressure they exert on politicians: Everyone wants to live better—including the fathers and the uncles of the hydrogen bomb.... Who has not heard the warning that a rival is catching up to Russia? It seems to me that the rival is already ahead of us in this fatal race, but the winner is also having increasing difficulty keeping up this pace.

The "Greens"—foreign and domestic—have been accused so many times of spreading radiophobia, or they have heard the more pointed accusation that they should put their time and energy to better use by finding ways to feed the hungry. All of this has been accompanied by the martial strains of a song bemoaning the lack of patriotism. I regret that the "hawks" of the nuclear military-industrial complex have never told me how much our welfare has been enhanced by the production and testing of nuclear weapons, and how the new ratios of radionuclides in the environment are improving human health.

Take a look, dear readers, at the silhouette of Novaya Zemlya and the spots where solid radioactive waste was submerged and liquid waste was dumped in this issue of CHAS PIK. The place where the atomic submarine "Komsomolets" sank is not marked on the map. I spoke with surviving members of the crew, and they told me that a nuclear reactor and two torpedoes with nuclear warheads are located just 300 miles from Norway, at a depth of 1,680 meters. The dump sites of over 100,000 (!) cubic meters of liquid radioactive waste and the place where the lighter "Nikel" was secretly submerged with solid radioactive waste are not marked on the map either....

In addition to being polluted by the Novaya Zemlya test range, the northern seas flowing into the world ocean are also vulnerable to the influences of the southern Urals and the industrial regions of Siberia. Is this an exaggeration? Here are some official data that were made public for the first time at the conference in Arkhangelsk.

"Radioactive waste was produced on such a scale at facilities of the nuclear complex in Chelyabinsk-65, Tomsk-7, and Krasnoyarsk-26 that its distribution throughout the world would cause a global catastrophe.



NOTE: The contents of the containers were not sealed with concrete, glass, or bitumen, and for this reason the containers frequently would not sink. In 1984 a floating container with radioactivity measuring 160 r/hr was fished out of Abrosimov Bay. The crew of the "Lepse" (Murmansk Shipping Lines), which had been specializing in the disposal of solid RAO in the sea for more than a decade, conducted a complex technological maneuver on the container: They punched two holes in the water-tight shell with a chisel. The sepulcher filled with water and sank to the bottom of the Kara Sea....

KEY:

1. Novaya Zemlya trough: 1,450 containers, a barge with a damaged nuclear reactor (170,000 curie) and a lighter for the transport of liquid RAO
2. Neupokoyev Bay: solid RAO with total activity of 3,400 curie
3. Tsvolki Bay: 4,750 containers, the lighter "Nikolay Bauman," and the central compartment of the ice-breaker "Lenin" with three damaged reactors
4. Oga Bay: 850 containers
5. Stepovyy Bay: 1,850 containers and a damaged atomic submarine with two reactors still containing nuclear fuel
6. Abrosimov Bay: 550 containers and compartments of four damaged atomic submarines (eight reactors, three of which still contain fuel)
7. Blagopoluchiye Bay: 650 containers of RAO
8. Tcheniya Bay: damaged reactor without nuclear fuel, total activity of 1,850 curie
9. Open sea: 400 containers
10. Open sea: 250 containers

The Mayak Production Association alone dumped radioactive waste with a total activity reading of over a billion curie in the basin of the Techa and Mishelyak rivers (270 square kilometers) in the 40 years of its existence. If this quantity were to be distributed throughout the CIS, the situation would be more frightening than Chernobyl. At this time the danger is confined to Chelyabinsk, Yekaterinburg, Kurgan, and Tyumen oblasts, but there is no guarantee that the ground water polluted by radionuclides will not reach the Ob and then the Kara Sea in the next five years. Almost 900 kilometers of the floodplain of the Yenisey, as we recently learned, are already polluted by artificial radioisotopes from the reactors of Krasnoyarsk-26."

This is why the accessibility of information about radioactive waste on land and in the sea is so important. Documents stamped "Confidential" give us reason to doubt scientific forecasts and assessments of our safety, because, according to V. Menshikov, deputy chairman of the Committee on Ecology of the Russian Federation Supreme Soviet, and Yu. Dmitriyev, a member of the same committee, the Ministry of Defense is still having no trouble ignoring the committee. The deputies of the Russian parliament do not know who can tell them the location, content, and size of disposal sites. No one has been able to break through the departmental curtain of secrecy surrounding the Rossiya (what a name for a nuclear graveyard!) Test Range on Novaya Zemlya—the decisions of generals carry more weight than the decisions of deputies.

In my final report on my trip to Arkhangelsk, I will describe an explosion at the conference—an information explosion. CHAS PIK will be the first in the country and the world to publish the shocking data the newspaper received from a Norwegian international research institute.

[No 47, 23 Nov p 3]

[Text] While I was preparing the report of my trip to Arkhangelsk for publication, the president of Russia signed an ukase extending the moratorium on nuclear tests until 1 July 1993. It is possible that the voice of the Russian and international ecological community, addressing the leaders of all five nuclear powers, was heard from Arkhangelsk. In turn, B.N. Yeltsin addressed the leaders of Great Britain and China with a request for their support of the moratorium.

Therefore, the nuclear test range will be "standing idle" until July 1993, but the test shafts that have been built for so long and with such skill on Novaya Zemlya by miners from the Ukrainian city of Zheltyye Vody in the region of Chernaya and Mityushin coves will have to be kept in working order. But will the Ukrainian foreigners even be allowed onto the Russian nuclear archipelago now?

Judging by the results of Andrey Kozyrev's recent trip to Paris, French nuclear scientists will be trying to burn fissionable substances in our reactors. The French will

allocate hundreds of millions of francs in the next four years to rid us and the world of the Russian, Belarusian, and Kazakh missiles. The plans for the Ukrainian missiles are known only to Mr. Kravchuk, whose nuclear ambitions are growing in direct proportion to the decline of the yellow and blue power's economy. In this context, I will advise the readers to pay close attention to the statement by B. Litvinov, chief designer at the Russian Nuclear Center, which he made at the press conference I will be discussing in this report.

I would like to start by describing the range of opinions expressed at the press conference. It was logical and symbolic—the generals from the nuclear military-industrial complex are firmly convinced of their infallibility and authority. They have good reason for this: The "gap" between the two presidential ukases on the test range on Novaya Zemlya (the one "Not for Publication" and the one accessible to all) is a graphic example of this. This has to be taken into account, but the supporters of nuclear-free zones, Greenpeace, and other environmental organizations are also gaining ground. The "Green" uproar caused by the international ecological crew of the motor launch "Solo" was heard around the world.

In view of all this, the conclusions of a group of Russian Imranovich's emissaries, who were allowed by the military to make a short trip to Novaya Zemlya, sound completely naive, to say the least. In their search for a consensus, which has long been absent from the Russian parliament, the deputies suggested that the military reduce the territory of the test range by a third. The people's deputies advised the Arkhangelsk administration to turn the rest of the territory into... "natural preserves and tourist resorts."

Before the mass influx of visitors to the northernmost and most radioactive "resort" in the world begins, I suggest that the deputies be the first to walk the tourist paths on the archipelago....

Excerpts from Press Conference at Section on 'Nuclear Tests and Environmental Pollution. Proportional Responsibility of Novaya Zemlya Test Range'

A. Zolotkov, engineer of radiation safety service of the Murmansk Shipping Lines: When we dispose of radioactive waste in the Arctic seas, we are violating the main requirement of the London convention—the disposal depth is supposed to be at least 4,000 meters. The Kara Sea is no more than a few hundred meters deep, and a few dozen meters in the bays.

...We do not have the right to agree with those who preach the "theory of dilution" and pretend that radioactivity in the environment cannot harm life. The half-life of many radioactive isotopes is measured in hundreds of years. Here is an analogy from our current experience: We are witnessing something like the dilution of weapons—machine guns, tanks, missiles, and aircraft. Yes, the concentration of weapons in storage sites has been reduced, but now these weapons are in the

hands of thousands of people and have become deadly. It makes no difference to me how historians and presidents explain this process, but it does make a difference to me if a stray bullet kills my son. The same is true of radiation: As long as we use the terms "world ocean" and "mankind," the risk seems to be minimal, but all of these statements become demagoguery as soon as one individual gets radiation sickness.

B. Litvinov, chief designer of Chelyabinsk-70 Russian Nuclear Center (the Ural counterpart of the American Livermore Laboratory): We have to realize that the talk about Kazakhstan, Ukraine, and Belarus as nuclear powers is not serious. They do not have the whole complex of production and technology needed for the development, production, and destruction of nuclear weapons. These former union republics are no different from Japan and Germany, where the United States keeps its nuclear weapons.

The present state of the Russian economy still allows it to maintain this nuclear arms complex at the necessary level. If the level begins to drop, there will come a time when we will not be able to conduct tests or development projects, and will only be capable of securing today's level and supply of weapons.

Question of V. Menshikov, deputy chairman of Russian Federation Supreme Soviet Committee on Ecology: Chelyabinsk-70 is the nuclear technology think tank. What do you predict, Academician, will the five nuclear powers be able to adopt a political agreement on the complete renunciation of nuclear weapons after 1996?

B. Litvinov: I do not expect anyone to express a new view of nuclear tests without conferring with us. The safest nuclear weapon does not exist yet, and even if it did, it would have to be updated in line with changing circumstances. It will be impossible to make weapons safe without conducting nuclear tests!

Specialists from a U.S. national laboratory where new weapons are developed have said that computations alone cannot validate the use of the new low-sensitivity explosive "TAB" (triamintrinitrobenzol): It will have to be tested. I think we will have to conduct at least 16 tests before 1996.

S. Kolesnikov, doctor of medicine and co-chairman of Physicians of the World for the Prevention of Nuclear War, an international movement: If we break the vicious cycle of constantly replacing existing nuclear weapons with newer models, all of the nuclear countries, irrespective of the political situation, will have to remove obsolete nuclear weapons from operational status and destroy them within 10 or 15 years.

Colonel B. Sofronov, chief of radiation surveys of Rossiya Test Range on Novaya Zemlya: The density of radioactive pollution on Novaya Zemlya is only half as high as in the central latitudes of Western Europe. The readings of military experts from the test site indicate that the

dose loads of all nuclear bursts on Novaya Zemlya are far below those created by natural radionuclides during the same period.

D. Rasch, professor at Harvard University, United States: We do not trust American or Russian scientists who declare the need for "peaceful" nuclear explosions to make new weapons "safe"! From conversations in Moscow, I learned that Mr. Viktor Mikhaylov, Russia's minister of atomic energy, believes that nuclear tests are absolutely essential. Russian hospitals have no medicine or equipment, and there is no money in the country for economic revitalization, but the gentlemen of the military are willing to rob their people and spend billions on tests.

V. Logachev, doctor of technical sciences, department head at the Biophysics Institute of the Russian Federation Ministry of Health, and one of the administrators of the former Fourth Main Administration of the USSR Ministry of Health: When we were watching the films, you must have seen me. I was present at all of the commission meetings where the location and time of nuclear bursts were decided. I worked on radiation tests of weapons for 40 years and got a large dose of radiation, and now I am standing here before you, alive and healthy. In Altay Kray, through which more than 30 radioactive clouds passed after the airbursts in Semipalatinsk, the combined dose loads of all the nuclear bursts are only one-tenth as high as the dose from natural technogenic factors and x-ray diagnostic procedures.

People in the auditorium were shouting in Russian, English, Swedish, and Dutch:

"What an outrage! What a lie! How cynical!"

Question of Lev Korsunskiy, CHAS PIK correspondent: Did you, Professor, personally advise the members of the CPSU Central Committee Politburo who secretly multiplied the maximum permissible radiation dose by 10 for the Russian population of the Chernobyl contamination zone?

V. Logachev: I did. In accordance with a law in effect in the USSR at the time of the Chernobyl accident, the Ministry of Health and the National Commission for Radiation Safety were allowed to set temporary permissible levels of pollution and radiation depending on the scales of the radiation disaster.

CHAS PIK correspondent: Are we to understand that if two nuclear reactors had blown up in Chernobyl instead of just one, the permissible dose would have been raised to the next power?

V. Logachev: We set temporary levels....

E. Rubinova, journalist and Chelyabinsk City Soviet deputy: A book recently published in the United States says that radiation causes specific deformities in the third generation. Do you agree with these findings, Professor?

V. Logachev: Thorough studies of the population of Hiroshima and Nagasaki and of the dumping of radioactive waste in the Techa River in the Urals—and this is a huge database—indicated a higher rate of leucosis and cancer in the population, but we did not find any genetic changes in the third generation.

There were shouts in the auditorium:

"You should be ashamed, Professor! What a lie! How ridiculous!"

E. Rubinova: Hundreds of deformed children have already been born in Chelyabinsk, but your agency is still conducting experiments. You take people to your own clinic to be examined, the results are kept secret, and they are not given any kind of treatment. This is criminal medicine!

Then a voice was heard over the loudspeaker:

Turn off the lights, Gentlemen!

We heard the whirring sound of a laser projector, illuminating a square meter on the wall. Before any image was projected, however, Johnnie Skorve, a Norwegian associate at the International Research Institute with its headquarters in Oslo, asked for a chance to speak. Here is what he said:

"Back in late 1989, when we began hearing rumors that the nuclear test range in Semipalatinsk would be closed, we already knew that Novaya Zemlya would become the only test site in Russia. Consequently, the number of bursts near Norway and the other northern countries of Europe would be compounded as the intensity of the work on the Novaya Zemlya site would increase.

"We requested photos from American and French civilian satellites and began receiving them regularly. We received analytical information from Greenpeace and other environmental organizations. Our conclusions and our analysis of the testing procedures on Novaya Zemlya will be summarized in a special report and will be printed for your perusal. Now, Gentlemen, I would like a few minutes of your attention," Skorve said in conclusion.

I do not know what kind of optical equipment spy satellites have, but the equipment on civilian satellites—French and American—is quite powerful. As each slide Johnnie loaded into the projector clicked into place, the audience, half of whom were military officials and nuclear scientists, saw more and more of the secrets of the test range, which the military-industrial complex has been concealing so carefully—mainly from its own fellow citizens.

The roads leading to the shafts, to the "weapons chamber," where the nuclear device is loaded and exploded, could be seen clearly on the color slides. There were bomb shelters, barracks, and radar stations. There were naval ships in the bays and fjords. The traces of colossal

underground bursts reminded me of something A. Veshnyakov, a member of the Russian Federation Supreme Soviet, said after he had been to Novaya Zemlya: "The soldiers say that during a test a mountain peak will rise 30 meters into the air...."

Johnnie Skorve showed us a diagram derived from a combination of American and French slides and backed up by the data of seismic stations. It indicated that 29 tests of various yields were conducted on Novaya Zemlya in the last three years. This is a much higher number than the one reported in the press. (The diagram [not reproduced] shows the locations of the tests conducted on the archipelago in 1990-1992. It is interesting that even twin bursts were recorded—see location 22B in the northern and southern halves of the archipelago.)

The residents of Arkhangelsk began muttering. The Norwegians knew about every test at the very least. The Americans and French knew even more, and they knew about them before anyone else. But the Russians are still the most uninformed people in the world, just as they were during the 70 Soviet years.

The way that I got the diagram showing the locations and number of underground bursts on Novaya Zemlya in the last three years, which CHAS PIK is publishing for the first time in the world, could be the topic of a separate series of reports. I want to thank the Swedish colleague who translated my conversation with Johnnie Skorve in the quiet hours before dawn in the hotel. I want to thank the local security personnel who left the "observation post" in the hall on that floor unmanned between 2:00 and the next morning. Most of all, I want to thank Johnnie Skorve, who gave me the slide of this diagram. With the consent of J. Skorve, I want to inform the "Greens" of Arkhangelsk and St. Petersburg and other environmental organizations in Russia that his telephone numbers in Oslo are (47) 2-177050 and (47) 2-177015. He has promised to send his report to CHAS PIK also.

When I watched the reaction of the military—in and out of uniform—to the slides, I remembered a passage from "Nothing Has Changed on Novaya Zemlya," a report from Arkhangelsk by my colleague Viktor Tolkachev: "The officer of one of the 'points' on Cape Zhelaniye presented Professor Anatoliy Tkachev (he had conducted medical and biological examinations of the personnel of the unit on Novaya Zemlya) with a memento.

"The gifted soldier had installed a miniature model of the archipelago under plexiglass in the brass case of a large-caliber cartridge—complete with glaciers and snowy peaks, with Matochkin Shar Strait.... And he managed, as the saying goes, to 'hit the nail right on the head.' There was Novaya Zemlya, held captive in the clutches and under the power of the military-industrial complex."

Novaya Zemlya Weapons Testing Exerts 'Powerful Aftereffects'

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[Article by Boris Golubov]

[Text] On October 19 Boris Yeltsin signed an edict extending the nuclear test moratorium. As a result, Russia's sole nuclear testing site—after the USSR's disintegration—in the Arctic Novaya Zemlya Archipelago will stay silent till July 1, 1993 at least. Yet defence officials do not attempt to hide that at the Central Technological Area near the Matochkin Shar strait miners continue to drill shafts in preparation for more explosions. The question of whether nuclear testing is needed and whether it is more harmful than useful was discussed at an International Arctic Ecological Problems and Prospects of Nuclear Disarmament Conference held in October in Arkhangelsk. While Russia still has nuclear weapons tests are essential, the representatives of the two—defence and atomic energy—ministries aver. [as published] They believe the ecological consequences of underground testing are minimal, the more so as there is "nothing for us to lose" on Novaya Zemlya.

But is that really so? The statement that Boris Golubov, a Russian parliamentary expert, who incidentally was barred to the Arctic nuclear testing site, issued at the Arkhangelsk Conference has bewildered representatives of the military-industrial complex who had hitherto so successfully fobbed off ecologists and public.

In the following exclusive contribution to our magazine, Boris Golubov, a professional geologist, who is Learned Secretary of the Russian Academy of Sciences Council on Biosphere Problems and head of the Ecological Consequences of Underground Nuclear Testing team of experts of the Parliamentary Committee on Ecology and the Natural Resources Management, sets out his views.

One feels alarm when studying the chart of underground tests on Novaya Zemlya, the data furnished by the Interdepartmental Commission for Assessing the Radiation and Seismic Hazards of Nuclear Testing as well as the map of the Archipelago's mineral deposits. "Mines" of appalling power are being laid under Novaya Zemlya and other Arctic regions.

String of 'Mines'

Between 1955 and 1963, before the Moscow Treaty banning nuclear weapon tests in the atmosphere, outer space and under water was signed, as many as 90 nuclear bombs with a total yield of 250 megatons (with the June 1961 explosion yielding record 58 megatons), were detonated on army testing site on Novaya Zemlya.

After the Moscow Treaty was signed, sabre-rattling muted as such explosions were detonated underground and already for industrial, besides military, purposes: Between 1964 and 1990, 42 explosions were detonated totalling 23 megatons, with the most powerful series

taking place between 1970 and 1975. Of the 115 industrial nuclear explosions detonated between 1965 and 1988 and totalling 1.5 megatons, 12 were conducted north of the Arctic Circle and about 30 within the basins of rivers debouching into the Arctic Ocean.

Thus was the Arctic enclosed in a string of "mines." Do they still represent a hazard, now that the explosions are past? The fact is that they have exerted powerful after-effects, such as environmental radioactive pollution, hazardous geological processes and a worsening ecology.

Underground nuclear tests are conducted in shafts at a depth of several hundred metres. For long it was thought, but without adequate evidence, that these shafts were hermetically sealed. During an explosion the temperature within the enclosed chamber reaches millions of degrees, causing sections of the rock to evaporate and melt. As it cools, the resultant mass oozes downward and covers shaft walls with a vitreous crust that had been thought impenetrable.

However, experts unexpectedly detected nests of radioactive pollution at distances rather far from the explosion site both on the ground and deep down. In some cases the causes were obvious, as when the explosion took place there had now and again been breakdowns, due to which radioactive matter had streamed out.

Breakdowns of this order were recorded on Novaya Zemlya on October 14, 1969, and also at the Kraton-3 installation in Yakutia on August 2, 1987. In other cases the spewing out of radionuclides were foreseen when superfluous pressure built up in the shafts: to relieve this pressure shafts were unsealed and radioactive matter thus streamed out.

Finally, in yet other cases, as was detected for the first time at oil and gas deposits in the Astrakhan and Perm regions, the nests of radioactive pollution deep down or on the surface were secondary, implying that they had come into being several years after the actual explosions.

Secondary seepage of radionuclides indicates that the hermetic sealing of shafts was highly relative and short-lived. With the passage of time hermetic encasing was violated by cave-ins, the movement of the mass of rock and the infiltration of subterranean waters and gases, and also by transgressions of mining and excavation techniques. The entire range of phenomena, known as subterranean technogenic destabilization provoked noticeable subsurface changes and compelled revision not only of the pattern for natural resources management, but also of technologies employed for processing the raw materials that were extracted within the zones of underground nuclear tests.

North of Brandt Bay

On August 1, 1986, seismologists recorded on Novaya Zemlya a medium-force earthquake at a depth of but three kilometres roughly 30 kilometres south of the Matochkin Shar strait and north of the Brandt Bay,

relatively nearby one of the testing sites, but at a time when no explosions were being detonated. Such near-surface tremours had not been recorded here before.

In the Arctic seismologists had sought exclusively to detect clandestine nuclear testing by the opposite side or to camouflage our own nuclear tests. The chain of seismological stations here, used exclusively for military purposes, never bothered to record relatively weak subterranean, post-explosion tremours. Recent discussions at the Institute of Geosphere Dynamics indicated though that given even so imperfect a system of observation, signs of abnormal subterranean activity had been recorded in the neighbourhood of the Novaya Zemlya testing sites. Incidentally, in 1986-87 ten relatively shallow earthquakes were recorded within the area of the three nuclear explosions in the Kola Peninsula, which has a much better network of seismological stations. These tremours were quite plainly the result of the technogenic consequences of testing.

To sum up, if the Novaya Zemlya Archipelago is seismic, the choice of a nuclear testing site here is scarcely happy. Specialists from the Sevmorgeologia agency with perennial experience in Novaya Zemlya subterranean research are still more categorical. In their view, it is "absolutely obvious that as it is a region of folds, with numerous breaks in solid rock formation, the Novaya Zemlya region is totally unsuited for subterranean nuclear testing."

Could the 1986 earthquake have been provoked by perennial subterranean destabilization brought on by nuclear testing?

Geology Committee Vs. Admirals

The indigenous population of Novaya Zemlya, led by the legendary Vyklo clan, settled here in 1869 and successfully engaged in fur trapping, fishing and berry gathering. However, in 1954 to ensure secrecy, the indigenous population was removed. Novaya Zemlya's biological rhythm was to be subject to combat and political training or to be coordinated with visits by army VIPs for inspection during hunting and red-fish spawning seasons.

It must be noted that Novaya Zemlya's ecosystems are extremely young and easily upset. Population of this territory proceeded, as the last glaciation period receded (glaciation is still observed on Novaya Zemlya's Northern Island). The inadequate warmth, permafrost, drastic seasonal climatic and biological changes, all call for delicate anthropogenic interaction.

Large deposits of manganese, polymetallic ores, gold, rock crystal and agate, as well as anhydrite gypsums, chrysolite asbestos and iron have been discovered on Novaya Zemlya. Experts claim the presence of rich deposits of crude carbohydrate materials in the form of natural gas crystalline hydrates, a very peculiar species of raw material, the technology for whose extraction has thus far not been mastered.

The Russian Geology Committee and the authorities of Arkhangelsk region have rolled up their sleeves, but will they be able to cope with the admirals? Indeed, they will need not only to overcome the obstacles of secrecy and the quite natural resistance of the military, but also the profound failure to understand that by subverting Russia's economic potential, the military-industrial complex is thus subverting her defences, or, in other words, is fouling its own nest.

This last summer, with other experts I planned to conduct geological observations on Novaya Zemlya. I submitted the required plan. The army command showed interest but nevertheless kept me out. Consequently, as I have no weighty proof on hand, I am obliged to invoke the authority of Mikhail Lomonosov, the *moujik*-savant from Arkhangelsk, who did so much to advance Russia.

At a public gathering of the Academy of Sciences in 1757 Lomonosov presented a report on the earth-quaked birth of metals, wherein for the first time he told the world about those "nonsensical tremours" whose impact is not immediate. In conclusion the savant declared: "Look at your blessed Fatherland and compare it to other lands... We do not suffer from frequent earthquakes that we hardly hear about, and enjoy the inner peace of the subterranean and of all of society. How blessed is Russia in having such qualities!"

Komsomolets Designer Says Radiation Leaking From Torpedoes

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[Article by Yuri Teplyakov]

[Text] At the nuclear-powered submarine *Komsomolets*, now lying at a depth of 1,700 m in the Norwegian Sea, water is corroding nuclear torpedoes.

"I have told you all. Now it's up to you to decide whether this should be brought to the knowledge of the world."

For exactly a year these words of the academician have been like a splinter in my side. All this time I have been tormenting myself: do I have a right to disturb the memory of the dead? Do I have a right, even through the lips of a different person, to accuse those who, for five hours, deep under water, leaving compartment after compartment suffocating and burning alive, were thinking solely about their ship, the titanium god, which had no right to die. Those who even on the surface, having burst out of the inferno, choking with ice-cold water, still refused to believe that they were seeing their submarine and the whole of the wide world for the last time...

If on April 7, 1989, the Main Naval Headquarters of the Soviet Union received a radiogram saying that the Moscow Kremlin had been blown up, this report would hardly have upset the usual rhythm of local service life. But when through the blizzard and gale which on that

spring day were raging over the Norwegian Sea, Moscow heard the voice of the dying nuclear-powered submarine *Komsomolets*, they simply kept repeating—this is impossible. Incidentally, whoever knew the submarine could not reason in any other way.

The *Komsomolets* was a phenomenon of the submarine fleet of the whole world, a national achievement of the Soviet Union. Any world power could only dream of having such a submarine beyond the threshold of the 20th century. The best American submarines dive to a depth of 400m. The *Komsomolets*' working depth (let me emphasize the word "working") was 1,000 m. In this hydrocosmos she was absolutely out of reach from existing weapons.

Three of our nuclear submarines now lie on the ocean floor. One was wrecked in March 1970, another in October 1986, the third, the *Komsomolets*, I saw lying on the bottom with my own eyes. At the Rubin design bureau I was shown a film which they made during the first expedition to a depth of 1,700 m. The submarine looks as usual. It can only be seen that the bolts are torn off on the deck—the submarine was heading to the bottom almost vertically and its impact against the ground was monstrous. Specialists maintain that blasts went off in the inside at the moment of submersion. The same is corroborated by the sailors who survived. Already on the raft they heard two or three powerful sounds from down below. Most likely the submarine was already on the ground by that time. Maybe this is the reason why the shutters of torpedo tubes—they are four meters from the tubes themselves—are open and the nose cap has been torn off. As to the rest, everything seems to be in place. The same is also the view of Igor Spassky, General Designer of the Rubin bureau, the father of the *Komsomolets* and, until recently, one of the most strictly classified people of the Soviet military-industrial complex. A few years ago, as he himself put it, I would not have been let to come within gunshot of him. For his leverage in the military industry he is hardly second to the rocket designers Korolyov and Chelomei or the nuclear physicists Alexandrov and Sakharov. Whereas the latter were thinking of how to make the nuclear warhead more terrible, Spassky has been tackling and is still tackling a no less responsible mission how to deliver these warheads to the territory of a potential enemy. His submarine Akula (Shark) carries 200 nuclear warheads and is alone capable (this is also his own estimate) of destroying the whole of the United States and affecting its neighbours in the process. The former system cherished people like Spassky. The press not only did not mention them by name, but did not make even a hint at their existence. I remember how at a missile firing range near Arkhangelsk the father of the SS-20, Alexander Nadiradze, just smiled in reply to my request for an interview: if you merely claim having seen me you will at best be fired. But you want to write. I am simply nonexistent.

And right he was: when I wrote in my report that the author of the missile was born in the Caucasus, giving

neither his name nor surname, the censor deleted even this. It is unbelievable that all this used to be, especially now that Igor Spassky is sitting next to me and making whatever by the old (and even present-day) yardsticks amounts to the most confidential statement.

"We had no doubts that radioactivity would appear on the wrecked submarine *Komsomolets*. We believed that this would take place in five years when corrosion had eaten away the metal. It turned out that the process commenced earlier. We made sure of this, having carried out an immense complex of sample tests. Of water, ground and sediments alike. A special expedition was organized to the site of the *Komsomolets* wreckage.

"In the first submersion to a depth of 1,700 m we set up plates and six days later we took them off. We're dealing with the finest doses of radiation that usual instruments simply do not respond to. The process is most intricate. The sediment alone was dried up in the course of six weeks. Then it was processed at the Arzamas-16 nuclear centre. The very first results of the analyses showed an increase over the background level.

"But previously it was claimed: the reactor had been dependably stopped, all the nuclear warheads had been isolated and no radiation was expected for centuries to come."

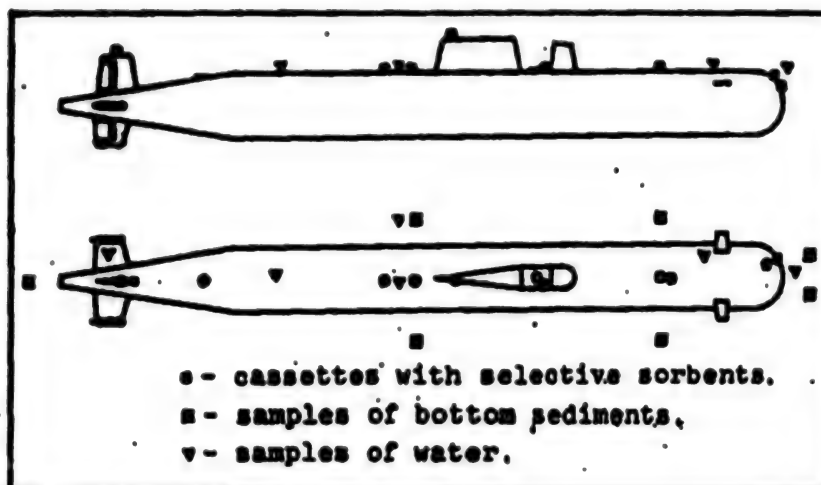
"I repeat that I personally put off the emergence of radiation only for a few years. I could not help its emergence. But on the other hand, I contend: it presents no danger for adjacent countries."

"And what is the source of radiation?"

"Water gnawed through the heads of torpedoes with nuclear charges. The lids of front tubes are open and outside water did its job. It is this breakthrough that we expected."

"And the reactor? As far as I know, it is made of steel. The sub's body, on the other hand, is made of titanium, and the electrochemical process between them in salt water causes the destruction of metal. The process does not favour the reactor. Titanium devours steel in salt water. Am I right?"

"Undoubtedly. But we expect no swift leakage. In the reactor compartment water must pass across several thresholds before it starts destroying the circuit. The process is sufficiently static here. Outside current does, of course, produce some diffusive-suction phenomena also wherever there are holes in the durable hull. But erosion is negligible so far. Though it does exist. In general we presupposed a worse variant: the constructions being destroyed and everything in the inside being torn off at the moment of the submarine's submersion. The primary circuit could also have been damaged. Regrettably, we cannot take a look at the inside. What is reassuring is the fact that the hull is undamaged in the area of the reactor. If the circuit had been destroyed in



the inside, the instruments would instantaneously have spotted radiation. But the instruments behaved quietly."

"It's good that the reactor is still resisting, but how long will it be necessary to wait for the torpedoes with nuclear warheads to be utterly destroyed?"

"What has commenced cannot be halted. But we have about five years in the reserve. Not more."

"and what will follow then?"

"The present worries me more than the future. The mere thought that radiation, even if in negligible quantities, even if they present no real danger to ecology, is ruining the sea makes people shudder all the same. Today nine nuclear reactors and 50 nuclear warheads are lying on the bottom of oceans. I don't know which of them are the most dangerous. Incidentally, your own pain is stronger. But if this were our trouble alone. The Norwegians are nervous. Norway exports 80 percent of its fish catch. And imagine the reaction of people who suddenly learn that a nuclear submarine is lying not far from Norway and is emitting smoke, even if insignificant, of radiation... And that the *Komsomolets* will smoke with radiation is a foregone conclusion. True, as our experts estimate, the enhanced radiation background remains in the immediate proximity of the ship. Yet this is what we know, but what remains unknown to the millions who buy fish. How will they react? It's not difficult to guess. They will accuse us, even if the fish has caught radiation thousands of miles from the *Komsomolets*. I repeat, it is enough for panic to begin and then all the curses will fall on our heads. I am all in favour of salvaging the submarine. And doing this as quickly as possible. Though this effort will cost us hundreds of millions of dollars. On the other hand, the country's treasury is empty. Therefore I suggest putting time off a little bit. But to somewhat mitigate the psychological pressure which the emergence of radiation will bring to bear on

the adjacent countries, I suggest going down to the bottom and doing something to the submarine."

"Won't it be most effective to pull out the torpedoes with nuclear warheads?"

"We won't be able to get the torpedoes, but to close all openings with a quickly hardening substance—this is, perhaps, a way out of this critical situation. If we manage to seal the torn-off hatch in the area of the first compartment and several other openings, this will end the diffusional process. It will give us a respite of about six years."

"As I see it, all your worries are solely about the submarine, but lying on the bottom, some 300 metres from the hull, is the escape chamber which still contains the bodies of several sailors, including that of the commander. Why doesn't the chamber worry you?"

"Indeed, we lost it in the White Sea at a low depth. I agree that it was probably wrong to ignore this omen. But try and learn what lies in store for you. The most important thing the navy has accused me is of not testing a single chamber on any submarine at the maximum depth. I have been bluntly told: the *Komsomolets* crew's tragedy lies in the fact that the chamber did not depart from the submarine's side because of a design fault. I shall tell you why this happened. It is the first time I have talked about this. It is horrible to accuse the dead, but the crew is to blame. Before using something there is a need at least to know what this something is. The submarine *Komsomolets* had a unique structure for casting off life rafts. When the crew were leaving the ship, nobody was able to use them, and everything went down the drain. Now about the escape chamber. None of them has been tested at a depth of 1,000 m. Everything had been verified in theory but not in practice. The chamber did not depart from the *Komsomolets*. Neither could it depart. The men did not know what to do in such a tragic situation. There had to be drills, but try and push 70 men into a chamber in the conditions of dead

silence at a depth of one kilometre, when the sun is shining and nothing is threatening your life. You cannot even imagine how horrible the world of this depth is. The mere thought makes the hearts of even experienced submariners shrink. Who is willing to take a great risk when the guarantee of life is nothing but the designer's word. It is better to send everything to hell and not get out of the sub's most durable hull. And people actually did that. I could not compel them. I had no right to constrain people. I only persuaded them. But the underwater world at a depth of 1,000 m has a repelling effect."

"Why then is it necessary?"

"In terms of noisiness our submarines are dozens of times inferior to American ones. They are defenceless at high speeds. The depth of a thousand metres radically changes the situation. That is why we had been striving for it when developing the *Komsomolets*. And she would have coped with her mission with flying colours had it not been for the tragedy of the spring of 1989. But it is too early to write off the submarine. We shall salvage her by all means. She still presents colossal value. And not only as 6,000 tons of titanium. Her secrets are still inaccessible to others."

In parting, I asked the academician: "April 7, 1989—was it the darkest day in your life?"

"There were even darker days. It was even more horrible when I received a telegram about an accident on the first Soviet nuclear submarine. That was in 1963. Everything there was close to me—both the ship which I had designed and my friends with whom I had studied in St. Petersburg. Fighting for the ship's survival, they were climbing literally naked on the reactor. Lacking experience, they did not know what was awaiting them. But I already saw the future. And so it happened. Quite a few died at once, but many were dying before my eyes. I, for my part, could not do anything. That was where there was the greatest pain. True, even today I have a lump in my throat as I imagine how the *Komsomolets* is lying on the bottom, with the chamber next to it, and in them there are people for whose death I am in general also to blame..."

There is a sad ring in the following line of the latest report: in this area of the reactor compartment the existence was found of the isotope of strontium 137. What does this mean? Maybe the washing away of the 116 kg of concentrated uranium which are still hidden behind the steel armour of the reactor has started?

Naval experts say: this is not terrible, all this is at the negligible level of atoms.

Maybe, so far it is not terrible. After all, even they know how titanium eats up steel in salt water, how an iron pier melts away in two or three months when a titanium submarine presses itself to it.

Does it mean that Igor Spassky is right—there are only a few years in the reserve?

"Spassky deliberately lays the paint on thick when describing the danger to procure the money needed to prolong the life of his bureau which has already been cut by half."

The above is also a position held by competent people. I listened to them as well. But who is right? And who is lying? So far this is unknown. At the close of the year the problem of the *Komsomolets* will be discussed by the government of Russia. It will also solve the destiny of the submarine—our national pride—which is breathing out radioactivity in the Norwegian Sea at a depth of 1,700 metres....

CBW Revelations Dismissed as 'Fantasies'

PM2112161592 Moscow PRAVDA in Russian
19 Dec 92 p 2

[Interview with Aleksandr Gorbovskiy, chief of the Committee for Conventional Problems of Chemical and Biological Weapons under the Russian Federation president, by Vitaliy Kaysyn; place and date not given: "Myths and Reality of Chemical Disarmament. It Is Easy To Make a Sensational Statement. It Is Harder To Prove It With Facts"]

[Text] Since September of this year the mass media both inside and outside the country have been carrying sensational reports by the chemical scientists Lev Fedorov and VII Mirzayanov, who accuse Russia of making mistakes in past activity in the sphere of chemical arms and of taking unacceptable approaches today to the problems of chemical disarmament. We put specific questions to the Committee for Conventional Problems of Chemical and Biological Weapons under the Russian Federation president for the purpose of obtaining explanations on certain acute questions. Aleksandr Gorbovskiy, chief of this committee, replied.

[Kaysyn] Numerous articles, including those by Fedorov and Mirzayanov, state that the stockpiles of chemical weapons in Russia reach 70,000 tonnes, although far less has been declared officially. How would you comment on this?

[Gorbovskiy] Russia's chemical weapon stockpiles total 40,000 tonnes of toxins, and the places where they are stored have been officially announced by our state. They are subject to monitoring under international verification. The desire of certain "competent" specialists to impart their knowledge results in lies.

[Kaysyn] The 1989 events in Tbilisi and the use of chemical gases there are being discussed in the press to this day. Fedorov, for example, maintains that at the time, under cover of CS, a whole group of other, more powerful toxins was being tested.

[Gorbovskiy] I was involved in evaluating the events in Tbilisi as an investigation expert, and I officially declare that those reports are false. The Ministry of Internal Affairs Troops used two substances at the time: chloroacetophenone and CS, which are used throughout the world to combat disturbances.

[Kaysyn] *And yet toxins such as dioxin have been created, and also, maybe, toxins quite unknown to us ordinary citizens of Russia?*

[Gorbovskiy] Dioxins are a special case. The thing is that this group of toxic compounds is formed in many manufacturing processes in the production of pulp, herbicides, and chlororganic substances.

Scientists learned of the insidious properties of dioxins only after a large number of national economic products had been produced, including with the addition of dioxins. You would have a right to ask chemical scientists for their belated reaction to the danger posed by production of certain national economic products.

The desire to drag dioxins into the problem of chemical weapons and also to speak of their purposeful production can only be regarded as provocative.

[Kaysyn] *The draft program for the destruction of chemical weapons, in whose elaboration the Committee for Conventional Problems was involved, is now being discussed. To judge from critical statements, the draft program touches only on international commitments with regard to destruction and on inspection activity, for which, incidentally, hundreds of thousands of dollars are being requested. At the same time the elimination of the consequences of past production of toxins is not taken into account.*

[Gorbovskiy] The thing is that our desire alone to free the whole world from the threat of chemical weapons and to sign the convention is not enough. It is necessary to have a material base for the destruction of our stockpiles in accordance with the schedule under the convention: 1 percent three years after the convention comes into force, 20 percent after five years, 45 percent after seven years, and so on. Unless an industrial base is created in the very near future for the large-scale destruction of stockpiles, Russia will be unable to ratify the convention, and the process of chemical disarmament could slow up. As regards the currency expenditure, it is earmarked to pay for the activities of international inspectors at the rate of \$400 per diem each. They will inspect installations on Russian territory. In accordance with Article 4 of the convention, these costs are borne by the country that is subject to verification.

Finally, about eliminating the consequences. The environment has been polluted for many decades as a result of the work of enterprises in various sectors of industry. At the same time the functioning of toxin production facilities at several points, with the necessary norms of protection and security being ensured, has been unable to substantially exacerbate the ecological situation in the country over the span of 10-15 years. There is a problem, however, and it must be resolved at a state level.

[Kaysyn] *I know that, following publication of the article "Poisoned Policy" in MOSKOVSKIYE NOVOSTI, the Moscow Committee for Nature conducted a careful check on observance of nature conservation resources and soils*

at the Russian State Scientific Research Institute of Organic Chemistry and Technology on behalf of A. Yablokov, adviser to the Russian Federation president. It arrived at the conclusion that the facts set forth in the article do not tally with reality. And yet the articles by Lev Fedorov and Vil Mirzayanov cannot be considered exclusively negative: Thanks to such articles, the public learns something about chemical installations and about the possible danger.

[Gorbovskiy] This is justified if the information is objective. And yet it is manifestly obvious that Lev Fedorov is trying to become a national fighter for chemical disarmament. Too late, however—since 1987 our country has irreversibly adopted a policy of banning chemical weapons under strict international verification and concluding the convention as soon as possible. The data on installations, which Fedorov "sensationally" produces, have already been passed to the United States on a reciprocal basis and will be monitored in the course of inspections.

[Kaysyn] *Maybe he possesses more serious facts?*

[Gorbovskiy] Fedorov possesses no more detailed information than fantasies.

Chuvashia Bans Destruction of CW; Udmurtia Wants Delay

PM1301100793 Moscow KRASNAYA ZVEZDA
in Russian 12 Jan 93 p 4

[Oleg Bedula report: "Chuvashia Decides Not To Destroy Chemical Weapons, Udmurtia Looking for Alternative"]

[Text] E. Kubarev, chairman of the Chuvash Supreme Soviet, has signed a decree banning the destruction of chemical weapons on Chuvash territory or the siting of facilities for their destruction.

A session of the Udmurt Republic's Kambarskiy rayon soviet has expressed its attitude to the chemical weapons destruction program. The deputies decided to return to this issue after working out alternative technological solutions and adopting normative acts to provide a state guarantee. The session appealed to the committee on the treaty problems of biological and chemical weapons to postpone the destruction of these deadly munitions.

Ozone Hole Over Russia Increased 20 Percent in 1992

93WN0253A Moscow NEZAVISIMAYA GAZETA
in Russian 19 Jan 93 p 2

[Unattributed report: "Russia Ineffective in Protecting the Ozone Layer. This Could Lead to Economic Sanctions"]

[Text] Ecology

"In 1992, ozone holes expanded over Russian territory at an unprecedented rate." This was stated by Albert Chernikov, director of the Central Aerological Observatory, at a recent press conference at the Russian Ministry of Environmental Protection and Natural Resources.

Until recently ozone destruction occurred mainly over the planet's southern hemisphere. In the 1990s, however, depletion of the ozone layer began to occur over Russia as well. Last year a record depletion—20 percent—was registered over the northwestern regions of the republic. On 28 Jan 92, the lowest content of ozone ever was registered in the atmosphere over St. Petersburg. Scientists are also concerned that depletion of the ozone content over Russia is occurring not only in winter, as before, but the year round. In the opinion of doctors, the population will start feeling the consequences of this in the very nearest future: every percentage point of depletion of the ozone layer increases the incidence of skin cancer alone by two-six percent.

At the same time, Viktor Danilov-Danilyan, Minister of Environmental Protection and Natural Resources, who spoke at the press conference, told the journalists that, because of economic difficulties, Russia was unable to meet its commitments, undertaken when it signed the convention on protecting the ozone layer and its protocol on ozone-destroying substances. In conditions when most Western states have already implemented all the measures stipulated in those documents and are increasingly abandoning the use of ozone-destroying substances, Russia is, to put it mildly, in an unfavorable situation. Today it accounts for 10 percent of the world output of ozone-destroying substances, which is substantially higher than Russia's share in world industrial production.

Russia's economic crisis has also forced it to review its position with regard to the signing of new international agreements on reducing the output of ozone-destroying substances. Henceforth the republic will support only those treaties which offer significant financial advantages. As for obligations already assumed, under the Montreal Protocol on substances destroying the ozone layer Russia must cease using them in industry over three years. This will require not less than 20 billion rubles. However, failing to fulfill this requirement will, in the view of specialists, cost the country even more. Thus, today Russia exports more than a million refrigerators which use ozone-destroying freon. If there is no conversion to other substances, then as a result of trade sanctions and restrictions on purchases of items not meeting international ecological standards this export item will be nullified.

Decree on Deliveries of Products, Industrial Waste
935D0192B Moscow ROSSIYSKIYE VESTI in Russian
24 Dec 92 p 4

[Text of Russian Federation Government Decree No. 959 of 10 December 1992 "On the Deliveries of Products and Industrial Waste Whose Free Sale Is Forbidden" signed by Ye. Gaydar: "For the Attention of Entrepreneurs"]

[Text] The Government of the Russian Federation decrees:

1. That the accompanying lists of products whose delivery to customers authorized to use them in the Russian Federation and the products whose delivery in the Russian Federation is based on quotas are approved. (In this decree, the word products means the products and industrial waste whose free sale is prohibited by the Russian Federation President's Decree No. 179 of 22 February 1992.).

That the licensing and setting of quotas for the export of products, including deliveries to member states of the Commonwealth of Independent States, is to be carried out in the procedure established, except for the auction sale of export quotas.

That products are to be exported in accordance with the licenses issued by the Russian Federation Ministry of Foreign Economic Relations.

2. That the sale in the Russian Federation of precious metals, precious stones, and the items made with them, as well as industrial waste which contains precious metals and precious stones, is to be conducted in the procedure established by legislation in effect.

3. That the Russian Federation Ministry of Economics is to draw up balances of payments and set overall quotas for Russian Federation ministries and departments for consumption in the Russian Federation of strategic materials, rare-earth metals, and ethyl alcohol from foodstuff raw material.

That Russian Federation ministries and departments are to allocate the volumes of this output for consumption by enterprises and organizations in accordance with the overall quota received.

4. It establishes that:

—the producers of a product have the right to conclude agreements for its delivery only with the customers who have received the quotas for consumption of the product or who have been authorized to use it in the Russian Federation;

—the procedure for delivery of a product stipulated by this decree is obligatory for all organizations and enterprises in the territory of the Russian Federation, regardless of their form of ownership, departmental affiliation, and place of registration; and

—organizations and enterprises, regardless of their form of ownership, are to submit quarterly reports on production and delivery volumes to the Russian Federation ministries and departments indicated in the lists cited in Paragraph 1 of this decree.

5. That Paragraph 1 of Russian Federation Government Directive No. 713-r of 13 April 1992 is declared invalid.

[Signed] Ye. Gaydar

List of Products Whose Deliveries in the Russian Federation Are Based on Quotas

Cobalt	Russian Federation Committee on Metallurgy
Tungsten concentrates	Russian Federation Ministry of Economics
Molybdenum concentrates	Russian Federation Ministry of Economics
Loparite concentrate	Russian Federation Committee on Metallurgy and Ministry of Atomic Power
Tantalum, its alloys, and the raw material for its production	Russian Federation Committee on Metallurgy and Ministry of Atomic Power
Lithium	Russian Federation Committee on Metallurgy and Ministry of Atomic Power
Promethium	Russian Federation Committee on Metallurgy and Ministry of Atomic Power
Actinium	Russian Federation Committee on Metallurgy and Ministry of Atomic Power
Yttrium	Russian Federation Committee on Metallurgy and Ministry of Atomic Power
Scandium	Russian Federation Committee on Metallurgy and Ministry of Atomic Power
Monocrystalline silicon	Russian Federation Committee on Metallurgy
Fluorspar concentrates	Russian Federation Ministry of Economics
Polycarbonate	Russian Federation Ministry of Economics
Durable electrolytic copper foil 18 to 100 micrometers in thickness	Russian Federation Ministry of Economics
Lavan condenser film	Russian Federation Ministry of Economics
Aryloxy	Russian Federation Ministry of Economics
Dezmulgatory [as transliterated] for preparing and refining petroleum	Russian Federation Ministry of Economics
Polyimide film	Russian Federation Ministry of Economics
Fluoroplastic polyimide film	Russian Federation Ministry of Economics
Polyacrylonitrile fiber	Russian Federation Ministry of Economics
Nitron braided strap	Russian Federation Ministry of Economics
Polysulfone	Russian Federation Ministry of Economics
Dianhydride of pyromellitic acid	Russian Federation Ministry of Economics

Glass textolite foil	Russian Federation Committee on the Chemical and Petrochemical Industry
Filaments and braided strap from SVM [synthetic high-polymer material] fibers	Russian Federation Ministry of Economics
Carbon materials of the ELUR [not further identified] type	Russian Federation Ministry of Economics
Carbon materials of the UKN [not further identified] type	Russian Federation Ministry of Economics
Granulated 2M fluoroplastic	Russian Federation Ministry of Atomic Power
Lanthanum	Russian Federation Committee on Metallurgy and Ministry of Atomic Power
Neodymium	Russian Federation Committee on Metallurgy and Ministry of Atomic Power
Cerium	Russian Federation Committee on Metallurgy and Ministry of Atomic Power
Praseodymium	Russian Federation Committee on Metallurgy and Ministry of Atomic Power
Samarium	Russian Federation Committee on Metallurgy and Ministry of Atomic Power
Europium	Russian Federation Committee on Metallurgy and Ministry of Atomic Power
Gadolinium	Russian Federation Committee on Metallurgy and Ministry of Atomic Power
Terbium	Russian Federation Committee on Metallurgy and Ministry of Atomic Power
Dysprosium	Russian Federation Committee on Metallurgy and Ministry of Atomic Power
Holmium	Russian Federation Committee on Metallurgy and Ministry of Atomic Power
Erbium	Russian Federation Committee on Metallurgy and Ministry of Atomic Power
Thulium	Russian Federation Committee on Metallurgy and Ministry of Atomic Power
Ytterbium	Russian Federation Committee on Metallurgy and Ministry of Atomic Power
Lutecium	Russian Federation Committee on Metallurgy and Ministry of Atomic Power
Wastes containing rare-earth metals	Russian Federation Committee on Metallurgy and Ministry of Atomic Power
Ethyl alcohol from foodstuff raw material	Russian Federation Ministry of Agriculture and Foodstuffs

List of Products Delivered to Customers Authorized to Use Them in the Russian Federation

Weapons and ammunition for them; military equipment and spare parts, components, and instruments for it; and all types of rocket fuel, as well as special materials and specialized equipment for their production; specialized gear for personnel of paramilitary organizations; and the standardized technical documentation for their production and use	Russian Federation Ministry of Defense
Missile and space complexes, communications and control systems for military purposes, and the standardized technical documentation for their production and use	Russian Federation Ministry of Defense
Equipment for protection against toxic chemical agents and the standardized technical documentation for its production and use	Russian Federation Ministry of Defense
Results of scientific research and planning work, as well as basic research, on the development of weapons and military hardware	Russian Federation Ministry of Defense and Ministry of Atomic Power
Cryptographic equipment and the standardized technical documentation for its production and use	Federal Government Communications and Information Agency attached to the President of the Russian Federation
Uranium and other fissionable materials and items made with them	Russian Federation Ministry of Atomic Power
X-ray equipment	Russian Federation Ministry of Public Health
Instruments and equipment which utilize radioactive substances and isotopes	Russian Federation Ministry of Atomic Power
Waste from radioactive materials	Russian Federation Ministry of Atomic Power
Toxic substances and drugs	Russian Federation Ministry of Public Health
Medicines (poisonous and strong)	Russian Federation Ministry of Public Health
Medicinal raw material obtained from reindeer breeding in the North (velvet antlers and endocrine raw material)	Russian Federation Ministry of Public Health
Explosives, explosive devices, powder, and waste from explosives	Russian Federation Ministry of Defense, State Committee on Industrial Policy, and Russian Federal Mining and Industrial Inspectorate

Moscow City Government Acts on Industrial Waste 'Shambles'

MK1101082793 Moscow MOSKOVSKIY KOMSOMOLETS in Russian 10 Jan 93 p 1

[Unattributed report under "Stop Press" rubric: "Industrial Waste Poses Threat to Muscovites' Lives"]

[Text] It has been found that every year there is over one quintal of toxic waste for every Muscovite.

MOSKOVSKIY KOMSOMOLETS has learned from official sources in the Moscow Government that a critical situation has developed in Moscow concerning the treatment and recycling of waste from industrial enterprises. Every year they accumulate 6.5 million tonnes of waste (over 0.5 tonne per Moscow inhabitant), of which 1.7 million tonnes is waste containing radioactive and chemical elements. These pose a particular danger to Muscovites' lives.

The utter shambles prevailing in this sphere has forced the city government to elaborate a comprehensive industrial waste treatment and burial program.

Government Commission To Address Lake Baykal Problems

LD2112191592 Moscow ITAR-TASS in English 1905 GMT 21 Dec 92

[By ITAR-TASS correspondent Pavel Ryabov]

[Text] Moscow, December 21 (TASS)—The Russian Government has set up a special commission on the Baykal lake's problems. In the adopted resolution on this issue, it is stated that the main task of the government commission will be to preserve the unique ecological system of this largest in the world freshwater lake, and secure the rational utilisation of natural resources of its basin.

The government commission, which is a standing body, will also coordinate the activities of all state institutes and public organisations in the working out and the implementation of programmes of the ecologically durable development and protection of the Baykal natural complex.

According to the resolution of December 18, Russian Vice Premier Valeriy Makharaдзе was appointed head of the government commission on the Baykal lake problems.

Officials Neglect Ecological Study of Proposed Electric Power Plant

93WN0226A Moscow ROSSIYSKAYA GAZETA in Russian 10 Jan p 2

[Report by Viktor Yegorov, assistant to the environmental protection prosecutor, Nizhegorod Oblast, senior justice counselor: "Alarming Quiet"]

[Text] Seven months ago the Nizhegorod oblast soviet decided to build a 4,000 megawatt electric power plant in the northern part of the oblast and to commission it between the years of 2005 and 2011. Only then did the Russian Ministry of Fuel and Energy and the oblast authorities order specialists at the Energoproekt and Teploenergoimport institutes to express their considerations regarding the future power source. The search for

an optimal building site started at the same time, but has not yet been found. Or could it be known only to a narrow circle of senior officials?

In any event, the local authorities did not reckon with the demands of the Law on Environmental Protection: not a single one of their resolutions contains even a hint of the observance of ecological safety standards in the construction of the project, the population's health safety, or consideration of the immediate and future ecological, economic and demographic consequences of the operation of the new power plant. Nor do we have the necessary expert conclusions of state environmental protection and sanitary-epidemiological authorities. Not even the type of plant—atomic, thermal, hydroelectric—to be built is known. Environmental protection legislation, however, sets special ecological requirements for each such project. It is also important to bear in mind that the northern timber regions of the area are essentially the only place where it is still possible to breathe clean air. It must also not be forgotten that the electric power plant will be a major national economic project and that under the law the decision to build it must be made by the Russian Federation Supreme Soviet, based on the conclusions of state ecological experts.

However, the most important prerequisite for undertaking the construction should be the approval of the most important controller: the population that can express its attitude toward the issue in the press or in a referendum. But, unlike the memorable campaign to prohibit the activation of the nuclear heat supply plant, the people of Nizhegorod know nothing of the oblast soviet's decision. This is why concerned citizens are increasingly turning to the oblast's environmental protection prosecutor for clarification.

In view of the fact that the matter concerns not only the people of Nizhegorod, but also the inhabitants of neighboring oblasts, the environmental protection prosecutor's office directed an appropriate query to local state authorities but to this day has not yet received an exhaustive reply.

Oil Extraction Threatens Yamal Peninsula Ecology, Native Culture

93WN0184A Moscow MOSCOW NEWS in English
No 45, 8-15 Nov 92 p 4

[Article by Leonid Leibzon: "Yamal: An Endangered Peninsula"]

[Text] Under a recent presidential decree, gas extraction on Yamal, a peninsula in Western Siberia, is to begin in 1996. Gas output has been steadily declining in Russia, and millions of tons of fuel are wasted. For example, as much as 150 million tons of oil in one year has been registered as missing, due to thefts, in Yamal alone.

Not to mention the annual losses of oil from accidents and the misuse of casing-head gas, which is simply burnt. No gas deposits in Yamal, no matter how large, could make up for such losses.

It's hardly the first time that the Sword of Damocles has been hanging over the peninsula. Soviet officials from the Ministry of the Oil and Gas Industry intended to start gas production there as early as last year. But their plans were frustrated by an environmentally-conscious public. An international Next Stop youth movement staged a rally in one of Moscow's parks to protect the Yamal Peninsula. Hundreds of Muscovites took part in the demonstration, carrying posters that read "Yamal for the Yamalites," "Save our land," and "We choose life over gas." Shortly after that, an article in IZVESTIA reported that the project had been suspended because it had not been thought through and because the consequences of industrial intrusion into the area had not been considered.

But the victory turned out to be only a brief respite, during which the officials had regrouped and changed tactics. Even though gas production in Yamal has not yet started, its land has already been mutilated by the wheels and caterpillar tracks of heavy vehicles, and by forest fires. Each test boring leaves 4 to 9 hectares of spoiled land. The current practices also require the removal of a 30 m-wide stripe of topsoil along a pipeline, which impedes the thawing out of soil up to 500 metres away.

The aboriginal Nenets have been living in the peninsula for about a millennium, in full harmony with nature. The way of life that they have developed over centuries is the most rational—and, perhaps, the only one possible—in the given climatic conditions. Research data warn that by the year 2000, the pasture lands used for grazing reindeer may shrink by half, at a minimum, and that the number of bird species will fall to 30 from the 79 registered in the 1970s. The spawning grounds of salmon species may disappear altogether. What makes the situation worse is that nobody seems to care about environmental issues.

As a matter of fact, you needn't wait until the year 2000 to see the fate that awaits the peninsula. Just visit the neighbouring Khanty-Mansi Area, at present Russia's main supplier of oil and gas. What you see there are ravaged taiga forests, polluted rivers, people suffering from illnesses, unemployment and alcoholism, the oblivion of native languages and traditions. This is what the "conquest of the north" resulted in there. Thousands of tons of chlorides, nitric and phosphate compounds are dumped in rivers. More than 200 rivers and lakes are no longer suitable for fish-farming. Hunting, the traditional occupation of the native people, is scarcely practised. Khants and Mansi are on the verge of extinction. Their life expectancy is 18 to 20 years shorter than that of an average Russian. Their infant death rate is twice as high as that found among other ethnic groups living in the area. Their overall death rate is four times as high.

I've seen the pictures drawn by children from a boarding-school in the town of Varyegan: ravaged forests, oil derricks with burning torches, pipes dumping something black into the rivers, fires, and occasionally—idyllic landscapes with an inscription, "The way it was before."

That's what is awaiting Yamal and its people. Considering that the peninsula has a permafrost, thoughtless interference in the natural processes may cause Yamal to vanish altogether.

WESTERN REGION

Belarus: Cleanup of Radioactive Site To Cost R100 Million

LD0501062793 *Moscow Radio Rossii Network in Russian* 0500 GMT 5 Jan 93

[Text] According to information published in the BRESTSKIY KURYER newspaper, 100 million rubles [R] will be required, without taking inflation into account, to transport and bury the radioactive facility known as Facility 802. The Russian Atomic Energy Ministry has already allocated R50 million to the Belarusian Ministry of Energy; the Brest Town Executive Committee has earmarked R1,250,000. The Brest oblast will also allocate funds. What is known in Brest as Facility 802 is a pass where secret USSR Defense Ministry deliveries used to be unloaded long ago: mainly uranium ore that was shipped from European countries to areas beyond the Ural ridge. [as heard] One year ago, all the soil of Facility 802, that is 16,000 cubic meters of earth, was due to be taken to the town of Zheltye Vody of the Dnepropetrovsk oblast. However, borders are closed now, and Ukraine has refused to receive this dangerous radioactive cargo. The question is now: Where will the radioactive Facility 802 be eventually transported?

Ukraine: Law on Protection of Atmospheric Air

935D0135A *Kiev GOLOS UKRAINY in Russian* 17 Nov 92 pp 11-13

[Text] Atmospheric air is one of the basic, vitally important elements of the natural environment.

This Law is directed at preserving atmospheric air in a favorable state and at renewing and improving it in order to ensure ecological safety of man's vital activities and prevent harmful influences upon the environment.

It determines the legal and organizational principles and ecological requirements regarding protection and use of atmospheric air.

Section I. General Provisions

Article 1. Objectives of the Law on Protection of Atmospheric Air

The objective of the Law on Protection of Atmospheric Air is to regulate relations in this area for the purposes of

preserving, improving and restoring the state of atmospheric air, preventing and reducing harmful chemical, physical, biological and other effects upon atmospheric air, ensuring sensible use of atmospheric air for production needs, and strengthening law enforcement and lawfulness in this area.

Article 2. Legislation on Protection of Atmospheric Air

Relations pertaining to protection and use of atmospheric air are regulated by this Law, written in accordance with the Ukrainian Law "On Protection of the Natural Environment" and other Ukrainian legislative acts.

Article 3. Administration of Matters Pertaining to Protection of Atmospheric Air

Matters pertaining to protection of atmospheric air are administered by the Ukrainian Cabinet of Ministers, the government of the Crimean Republic, the Ukrainian Ministry of Environmental Protection, the Ukrainian Ministry of Health, local organs of state executive power, and other state organs and local organs of self-management, in accordance with Ukrainian legislation.

Section II. Setting Standards and Norms in Protection of Atmospheric Air

Article 4. The Objectives of Setting Standards and Norms in Protection of Atmospheric Air

Ecological standards and norms are set for the purposes of establishing a complex of mandatory norms, rules and requirements regarding protection of atmospheric air from pollution and from the harmful effects of physical and biological factors, and ensuring ecological safety.

Article 5. Standards Pertaining to Protection of Atmospheric Air

State standards pertaining to protection of atmospheric air are binding, and they define concepts and terms, the conditions of utilizing and protecting atmospheric air, the methods of monitoring the state of atmospheric air and the requirements on preventing harmful effects upon atmospheric air, and they establish other requirements on protecting and utilizing atmospheric air.

Standards pertaining to protection of atmospheric air are drafted and enacted by the Ukrainian Ministry of Environmental Protection and the Ukrainian Ministry of Health in accordance with procedures determined by Ukrainian legislation.

Article 6. Norms Pertaining to Protection of Atmospheric Air

The following norms are set regarding protection of atmospheric air:

norms for the ecological safety of atmospheric air;

norms for maximum permissible emissions of pollutants into atmospheric air and for the harmful effect of physical and biological factors produced by permanent sources;

maximum norms for creation of pollutants released into atmospheric air during operation of production and other equipment, structures and facilities;

norms for utilization of atmospheric air as a raw material in basic production;

norms for the concentration of pollutants in gaseous exhausts of mobile sources and the harmful effect of their physical factors.

Ukrainian legislation may also establish other norms pertaining to protection of atmospheric air.

Article 7. Norms for Ecological Safety of Atmospheric Air

In order to assess the state of atmospheric air, norms uniformly applicable over all Ukrainian territory are established for the ecological safety of atmospheric air;

for the permissible concentrations of pollutants in atmospheric air in relation to people and objects in the natural environment;

for the maximum permissible levels of acoustic, electromagnetic, ionizing and other harmful physical and biological effects upon atmospheric air in relation to people and objects of the natural environment.

When necessary, stricter norms for the maximum permissible concentrations of pollutants and levels of other harmful effects upon atmospheric air may be set for resort, therapeutic and health improvement, recreational and other specific regions.

The norms for ecological safety of atmospheric air are drafted and enacted by the Ukrainian Ministry of Health and the Ukrainian Ministry of Environmental Protection.

Article 8. Norms for Maximum Permissible Discharges of Pollutants by Permanent Sources Into Atmospheric Air and for the Harmful Effects of Their Physical and Biological Factors

Norms for maximum permissible discharges of pollutants into atmospheric air and the maximum permissible harmful effects of physical and biological factors on it are set for each permanent source of discharges or other harmful physical and biological effects upon atmospheric air, in relation to each contaminant and factor of physical or biological influence.

Norms for maximum permissible discharges of pollutants into atmospheric air and for maximum permissible harmful effects of physical and biological factors upon it are set at a level at which the total discharges of pollutants and the total harmful physical and biological effect of all sources in the given region will not exceed the norms of ecological safety of atmospheric air (in terms of

the strictest norm), with regard for future development of the region during the time that the established norm remains in effect.

Draft standards for maximum permissible discharges of pollutants into atmospheric air from permanent sources are written by enterprises, institutions and organizations, and they are approved by organs of the Ukrainian Ministry of Environmental Protection and the Ukrainian Ministry of Health. These drafts are coordinated with local organs of state executive power and organs of local self-management as regards:

deadlines for implementing measures to reduce discharges of pollutants to standard levels;

deadlines for moving people and social facilities out of health protection zones;

reduction of production volumes and discharges of pollutants in times of unfavorable weather.

The draft norms for maximum permissible harmful effects of physical and biological factors upon atmospheric air are written by enterprises, institutions and organizations, and approved by organs of the Ukrainian Ministry of Health and the Ukrainian Ministry of Environmental Protection, in coordination with local organs of state executive power and organs of local self-management, as regards deadlines for fulfilling measures to reduce harmful effects of physical and biological factors to standard levels.

The procedure for drawing up and approving norms for maximum permissible discharges of pollutants into atmospheric air are established by the Ukrainian Ministry of Environmental Protection, while those pertaining to norms for maximum permissible harmful effects of physical and biological factors upon it are established by the Ukrainian Ministry of Health and the Ukrainian Ministry of Environmental Protection.

Article 9. Maximum Norms for Formation of Pollutants Released Into Atmospheric Air When Operating Production and Other Equipment, Structures and Facilities

Depending on when production processes and equipment were developed and placed into operation, on existence of scientific and technical developments and on feasibility, the following norms are set for different production processes, and for production and other equipment, structures and facilities:

maximum volumes of formation of pollutants in relation to particular types of production and other equipment;

requirements on introduction of production processes in terms of the effect of introduction of such processes on formation of pollutants;

regulations on the use and loss of raw materials.

The indicated norms are drawn up by enterprises, institutions and organizations, and they are approved by the Ukrainian Ministry of Environmental Protection.

Article 10. Standards for Use of Atmospheric Air as a Raw Material in Basic Production

Norms for the use of atmospheric air as a raw material in basic production are set in order to reduce harmful effects upon it. Norms for the volumes of use of atmospheric air as a raw material in basic production and the procedures of drafting and approving them are determined by the Ukrainian Cabinet of Ministers.

Article 11. Norms for the Concentration of Pollutants in Gaseous Exhausts of Mobile Sources and for the Harmful Effect of Their Physical Factors

Norms for the concentration of pollutants in gaseous exhausts and for the harmful effects of physical factors are set for every type of mobile source operated on Ukrainian territory. These norms are drawn up with regard for technical concepts that would reduce formation of pollutants, decrease the levels of harmful effects produced by physical factors, and clean gaseous exhausts, and with regard for feasibility. The procedure for drawing up and approving these norms is established by the Ukrainian Ministry of Environmental Protection and the Ukrainian Ministry of Health.

Section III. Measures to Protect Atmospheric Air

Article 12. Responsibilities of Enterprises, Institutions and Organizations in Protecting Atmospheric Air

Enterprises, institutions and organizations engaged in activities associated with discharges of pollutants into atmospheric air and with harmful effects of physical and biological factors upon it are obligated:

to implement organizational, technical and other measures to ensure fulfillment of conditions and requirements foreseen by permits for the discharge of pollutants and for other harmful effects;

to take steps to reduce the volumes of pollutant emissions and decrease the harmful effect of physical and biological factors;

to ensure uninterrupted, effective work of structures, equipment and apparatus used to clean discharges and reduce the levels of other harmful effects, and their maintenance in good working condition;

to maintain surveillance over the volume and composition of pollutants discharged into atmospheric air and over the level of other harmful effects, and to maintain permanent records on them;

to possess special preplanned measures to protect atmospheric air in the event of accidents and unfavorable weather, and to take steps to eliminate the causes and consequences of pollution of atmospheric air.

Fulfillment of measures to protect atmospheric air must not cause contamination of soil, water and other natural objects.

Article 13. Regulation of Pollutant Emissions Into Atmospheric Air by Permanent Sources

Permanent sources may release pollutants into atmospheric air only on the basis of permits issued by organs of the Ukrainian Ministry of Environmental Protection. The volumes of these releases are determined on the basis of norms for maximum permissible discharges of pollutants into atmospheric air.

The procedure for issuing permits for the release of pollutants into atmospheric air by permanent sources is established by the Ukrainian Cabinet of Ministers.

Article 14. Limitation, Temporary Prohibition (Suspension) or Discontinuance of Discharges of Pollutants Into Atmospheric Air and of Harmful Effects of Physical and Biological Factors

Activity that violates the conditions and requirements foreseen by permits in regard to discharges of pollutants into atmospheric air and the harmful effect of physical and biological factors upon it may be limited, temporarily prohibited (suspended) or discontinued by the Ukrainian Cabinet of Ministers, the government of the Crimean Republic, local organs of state executive power, the Ukrainian Ministry of Environmental Protection, and other state organs and organs of local self-management, within the limits of their competency, in accordance with Ukrainian legislation.

Article 15. Regulation of the Levels of the Harmful Effect of Physical and Biological Factors Upon Atmospheric Air

The levels of the harmful effect of physical and biological factors upon atmospheric air are set on the basis of norms, and in cases when a permit is issued in relation to them, other requirements foreseen by this permit must be observed as well. Permits are issued by the Ukrainian Ministry of Health, the Ukrainian Ministry of Environmental Protection and their local organs, with regard for the procedure established by Article 8 of this Law for approving norms for maximum permissible harmful effects of physical and biological factors upon atmospheric air.

In carrying out their activities, local organs of state executive power, organs of local self-management, enterprises, institutions, organizations and citizens are obligated to take the necessary steps to prevent and prohibit actions that would cause the established levels of acoustic, electromagnetic, ionizing and other harmful physical and biological effects upon atmospheric air and human health to be exceeded.

Article 16. Regulation of Harmful Effects Upon Atmospheric Air in the Absence of Norms

Harmful effects upon atmospheric air for which the corresponding ecological safety norms have not been

established are prohibited. In exceptional cases such effects may be permitted temporarily only by the Ukrainian Ministry of Environmental Protection and the Ukrainian Ministry of Health, on the condition that the corresponding norm is set and the necessary measures to protect atmospheric air are implemented during this time period.

Article 17. Measures to Protect Atmospheric Air at Times of Accidents and Adverse Weather

Enterprises, institutions and organizations responsible for discharges of pollutants or for harmful effects of physical and biological factors that can lead to extreme ecological situations when the established maximum norms are exceeded, when accidents occur and in adverse weather, are obligated to maintain special preparedness plans for the protection of atmospheric air, coordinated with organs of the Ukrainian Ministry of Environmental Protection, the Ukrainian Ministry of Health, local organs of state executive power and organs of local self-management.

When such extreme ecological situations arise, enterprise, institution and organization executives are obligated to report this without delay in accordance with the established procedure to organs responsible for state surveillance over protection of atmospheric air, and take steps to protect atmospheric air and eliminate the causes and consequences of its pollution.

Article 18. Regulation of Activity Affecting Weather and Climate

Activity directed at artificially changing the state of the atmosphere and atmospheric phenomena for economic purposes may be carried out by enterprises, institutions and organizations only with the permission of the Ukrainian Ministry of Environmental Protection, coordinated with local organs of state executive power and organs of local self-management.

In accordance with international agreements, enterprises, institutions and organizations are obligated to reduce and then completely discontinue production and use of chemicals harmfully affecting the ozone layer, and to reduce discharges of carbon dioxide and other substances, accumulation of which in atmospheric air may lead to negative changes in climate.

Article 19. Measures To Prevent and Reduce Pollution of Atmospheric Air by Motor Transport and Other Mobile Resources and Devices, and the Harmful Effect of Their Physical Factors

The following are done in order to prevent and reduce pollution of atmospheric air by motor transport and other mobile resources and devices and the harmful effects of their physical factors:

development and implementation of a complex of measures to reduce the toxicity of discharges, to decontaminate toxic substances and to reduce harmful physical effects during the planning, production, operation and

repair of motor vehicles, aircraft, vessels and other mobile resources and devices; conversion of transportation resources to less-toxic forms of energy and fuel;

sensible planning and build-up of population centers, observing the necessary setback from roads;

removal of motor transport enterprises, gas stations and transit truck traffic out of densely populated residential districts and beyond the city limits;

restriction of entry of motor transport and other mobile resources and devices into residential zones and vacation and tourist areas;

improvement of proper maintenance of roads and pavement;

introduction of automated traffic control systems in cities;

improvement of the procedures of fuel transport and storage, and establishment of permanent control over the quality of fuel at oil refineries and gas stations;

improvement of the activity of inspection and diagnostic points checking the concentration of pollutants in the exhausts of motor transport and other mobile resources and devices, and their harmful physical effect upon atmospheric air.

Production and operation of transport and other mobile resources and devices for which the concentration of pollutants in their exhausts exceeds the norms or the levels of the harmful effect of physical factors are prohibited.

Article 20. Fulfillment of Requirements on Protecting Atmospheric Air When Using Plant Protection Resources, Mineral Fertilizers and Other Preparations

Lists of plant protection resources, plant growth stimulators, mineral fertilizers and other preparations, use of which is permitted in economic activity, and the means of their employment are coordinated with the Ukrainian Ministry of Health and the Ukrainian Ministry of Environmental Protection.

When new preparations are created, norms for the maximum permissible concentrations and the methods of determining residual quantities of these preparations in atmospheric air must be developed.

Enterprises, institutions and organizations as well as citizens are obligated to adhere to the rules of transporting, storing and using plant protection resources, plant growth stimulators, mineral fertilizers and other preparations so as not to permit pollution of atmospheric air.

Article 21. Fulfillment of Requirements on Protecting Atmospheric Air During Mining and Blasting Operations

Mining and blasting operations must be conducted in accordance with regulations on preventing or reducing

levels of pollution of atmospheric air, using methods coordinated with the Ukrainian Ministry of Environmental Protection, the Ukrainian Ministry of Health and other organs, in accordance with Ukrainian legislation.

Locating new rock dumps and tailings in population centers is prohibited if they may become sources of pollution of atmospheric air or other harmful effects upon it.

Article 22. Fulfillment of Requirements on Protecting Atmospheric Air From Pollution by Production, Domestic and Other Wastes

The stockpiling, storage or placement of industrial wastes, domestic garbage and other wastes that are sources of pollution of atmospheric air by dust, toxic gases and substances of unpleasant odor or possessing other harmful effects are permitted only on the basis of a special permit on territory determined by local organs of state executive power and organs of local self-management, within the limits established by them, in observance of ecological safety norms, and when the possibility of their subsequent economic use exists.

Burning of the indicated wastes on the territory of enterprises, institutions, organizations and population centers is prohibited, except in cases where this is done using special facilities and the requirements of protecting atmospheric air are observed.

The owners of wastes that pollute atmospheric air or enterprise, institution and organization administrative organs empowered by them are obligated to provide for the processing, salvaging and timely removal of these wastes to enterprises that use them as raw material, or to special dumps.

Article 23. Noise Prevention and Reduction

The following must be carried out for the purposes of preventing, reducing and attaining safe levels of production and other noise:

creation and introduction of low-noise machinery and mechanisms based on technical norms;

improvement of the structure of transportation resources and the conditions of their operation, and maintenance of railroad and streetcar tracks, roads and pavement in good condition;

location of enterprises, transportation highways, airfields and other facilities that are sources of noise in accordance with established public health and technical requirements and noise maps when laying out and building up population centers;

production of construction materials, structures and technical resources and structures with the necessary acoustic properties; organizational measures to prevent

and reduce production, municipal, domestic and transportation noise, including introduction of sensible routes and times of travel of rail, air, water and motor transport within population centers.

Citizens are obligated to observe requirements set with the purpose of controlling domestic noise in apartments, as well as in the yards of residential buildings, on the streets, in vacation areas and in other public places.

Section IV. Observance of Requirements on Protecting Atmospheric Air When Planning, Building and Rebuilding Industrial Facilities

Article 24. Fulfillment of Requirements on Protecting Atmospheric Air When Locating and Developing Cities and Other Population Centers

The planning, location, build-up and development of cities and other population centers must be carried out with regard for the ecological capacity of the territory, and in observance of the requirements on protection, sensible use and ecological safety of atmospheric air.

Cumulative norms for maximum permissible discharges of pollutants into atmospheric air and for harmful effects of physical and biological factors upon it are drawn up by decision of local organs of state executive power and organs of local self-management in population centers where the activities of several enterprises, institutions and organizations affect atmospheric air. In cases where calculations based on cumulative norms or the results of observations of the state of atmospheric air reveal that the norms of ecological safety are exceeded, organs of the Ukrainian Ministry of Environmental Protection and the Ukrainian Ministry of Health may establish stricter norms for maximum permissible discharges of pollutants into atmospheric air and levels of harmful influence of physical and biological factors for individual enterprises, institutions and organizations. In such cases these enterprises, institutions and organizations are obligated to develop additional measures to reduce discharges of pollutants into atmospheric air and decrease the levels of the harmful effect of physical and biological factors upon it, in accordance with the procedure defined by Article 8 of this Law.

When it is impossible to reduce discharges of pollutants and decrease the level of the harmful effect of physical and biological factors upon atmospheric air to the set norms, the activity of the corresponding enterprises, institutions, organizations, structures and other facilities is discontinued, or their production profile is changed in accordance with articles 15, 17 and 20 of the Ukrainian Law "On Protection of the Natural Environment."

Article 25. Health Protection Zones

When the locations of new enterprises, structures and other facilities affecting the state of atmospheric air are planned and existing ones are rebuilt, health protection zones are established for the purposes of protecting

atmospheric air in regions of residential build-up, and in major vacation and health improvement areas.

If as a result of violation of the established dimensions and conditions of health protection zones the need arises for resettling the population, moving social facilities out of these zones or implementing other measures, enterprises, institutions, organizations, local organs of state executive power and organs of local self-management must resolve the questions of financing the necessary work, and determining the nature of this work and the time of its completion. In cases where such work is made necessary by introduction of new norms, its financing and completion time are determined by the Ukrainian Cabinet of Ministers.

Article 26. Coordination of Areas of Build-Up and the Plans for Building and Rebuilding Enterprises, Structures and Other Facilities Affecting the State of Atmospheric Air

Areas of build-up are determined and construction and reconstruction of enterprises, structures and other facilities affecting the state of atmospheric air are planned in coordination with organs responsible for state control over protection of atmospheric air, and other organs, in accordance with Ukrainian legislation.

Article 27. Conditions for Locating, Planning, Building, Rebuilding and Initiating Operation of Enterprises, Structures and Other Facilities Affecting the State of Atmospheric Air

New and rebuilt enterprises, structures and other facilities must be planned, located, built and placed into operation, existing production processes and equipment must be improved, and new processes and equipment must be introduced in mandatory compliance with ecological safety norms, with regard for the cumulative action of discharges of pollutants into atmospheric air and of the harmful effect of physical and biological factors upon it by all operating structures and other facilities and those planned for construction, as well as with regard for pollutants in the atmosphere, for their transport across borders, and for particular climatic features.

Building and placing into operation new enterprises, structures and other facilities and rebuilding those which do not correspond to the requirements on protecting atmospheric air are prohibited.

Article 28. Ecological Expert Examination

Ecological expert examination is carried out in accordance with a procedure determined by Ukrainian legislation in order to determine the ecological safety when planning, locating and building new enterprises, structures and other facilities, and rebuilding existing ones.

Article 29. Observance of Requirements on Protecting Atmospheric Air When Introducing Discoveries and Inventions and Employing New Equipment, Imported Equipment, Production Processes and Systems

Introducing discoveries, inventions and efficiency proposals, and employing new equipment, imported equipment, production procedures and systems are prohibited if they do not satisfy requirements on protecting atmospheric air established in Ukraine. In the event that the established requirements are violated, such activity is discontinued by state organs empowered to do so, and the culprits are punished.

Section V. Regulation of Relations Pertaining To Use of Atmospheric Air

Article 30. Use of Atmospheric Air as a Raw Material in Basic Production

Enterprises, institutions and organizations use atmospheric air as a raw material in basic production in accordance with norms written by them and on the basis of permits issued by the Ukrainian Ministry of Environmental Protection.

The procedure for writing these norms and issuing the permits is determined by the Ukrainian Cabinet of Ministers.

Article 31. Obligations of Enterprises, Institutions and Organizations Engaged in Activities Associated With Use of Atmospheric Air as a Raw Material in Basic Production

Enterprises, institutions and organizations engaged in activity associated with the use of atmospheric air as a raw material in basic production must foresee measures ensuring minimum necessary use of atmospheric air, and they must maintain records on the volume of atmospheric air consumed for production needs. These same requirements must also be observed when planning new enterprises and structures and improving production processes and equipment.

Use of atmospheric air as a raw material in basic production in excess of the established volumes is prohibited.

Article 32. Limitation, Temporary Prohibition (Suspension) or Discontinuance of the Use of Atmospheric Air as a Raw Material in Basic Production

In the event of a violation of conditions stated on permits and of the requirements of the norms, use of atmospheric air as a raw material in basic production may be limited, temporarily prohibited (suspended) or discontinued by organs indicated in Article 14 of this Law.

Section VI. Economic Mechanism of Ensuring Protection of Atmospheric Air

Article 33. Organizational and Economic Measures Ensuring Protection and Use of Atmospheric Air

To ensure protection and effective use of atmospheric air, organizational and economic measures foreseeing the following are introduced:

- establishment of limits on discharges of pollutants into atmospheric air and on other harmful effects upon it;
- establishment of limits on the use of air as a raw material in basic production;
- establishment of norms for fees and amounts of payment for discharges of pollutants into atmospheric air and for other harmful effects upon it;
- establishment of norms for fees for exceeding limits on discharges and other harmful effects, and on issuing permits for the use of atmospheric air;
- establishment of norms for fees for the use of atmospheric air as a raw material in basic production;
- extension of tax, credit and other advantages to enterprises, institutions, organizations and citizens that introduce low-waste, wasteless, and energy and resource conserving production processes, and implement other nature protection measures in accordance with legislation.

Article 34. The Procedure of Establishing Limits on Discharges of Pollutants Into Atmospheric Air and the Levels of the Harmful Effect of Physical and Biological Factors Upon It

Limits on discharges of pollutants into atmospheric air by permanent sources are determined for enterprises, institutions and organizations with regard for maximum permissible discharge volumes, and they are brought to their awareness in the form of temporarily coordinated amounts for every component of pollutant discharges.

The limits on discharges of pollutants into atmospheric air are established for enterprises by organs of the Ukrainian Ministry of Environmental Protection by way of issuing discharge permits.

Maximum permissible levels of the harmful effect of physical and biological factors on atmospheric air are established by organs of the Ukrainian Ministry of Health.

The procedure for establishing limits on discharges of pollutants into atmospheric air and the levels of the harmful effect of physical and biological factors is determined by the Ukrainian Cabinet of Ministers.

Article 35. Procedure for Determining Norms for Fees and of Collecting Payments for Pollution of Atmospheric Air and for Other Harmful Effects Upon It

Payments for discharges of pollutants into atmospheric air and for other harmful effects upon it are collected from enterprises, institutions and organizations. Collection of payments does not constitute release from compensation for damages caused by violating legislation on protection of atmospheric air. The amounts of the indicated payments are established by the Government of the Crimean Republic and by oblast, Kiev and Sevastopol city state administrations, on the basis of limits on discharges of pollutants into the atmosphere and on other harmful effects upon it, and the norms for fees for such discharges.

The procedure of establishing fee norms and of collecting payments for pollution of atmospheric air and for other harmful effects upon it is determined by the Ukrainian Cabinet of Ministers.

Article 36. Fee for Using Atmospheric Air as a Raw Material in Basic Production

The fee for using atmospheric air as a raw material in basic production is set on the basis of the norms of its use and the norms for the fee for a unit volume of atmospheric air.

The procedure of establishing norms for using atmospheric air as a raw material in basic production and the norms for fees and for collection of payments for it are established by the Ukrainian Cabinet of Ministers.

Article 37. Distribution of Payments for Pollution of Atmospheric Air, for Other Harmful Effects Upon It, and for Use of Atmospheric Air as a Raw Material in Basic Production

Payments for pollution of atmospheric air, for other harmful effects upon it and for use of atmospheric air as a raw material in basic production are distributed in accordance with Article 46 of the Ukrainian Law "On Protection of the Natural Environment."

Section VII. Control in the Area of Protection of Atmospheric Air

Article 38. Control in the Area of Protection of Atmospheric Air

The purpose of control in the area of protection of atmospheric air is to ensure observance of the requirements of legislation on protection and use of atmospheric air by all state organs, as well as by enterprises, institutions, organizations and citizens.

Article 39. State Control in the Area of Protection of Atmospheric Air

State control in the area of protection and use of atmospheric air is accomplished:

by local organs of state executive power;

by the Ukrainian Ministry of Environmental Protection and by its local organs;

by the Ukrainian Ministry of Health and its local organs insofar as concerns observance of ecological safety norms (maximum permissible concentrations of pollutants in atmospheric air, maximum permissible levels of acoustic, electromagnetic, radioactive and other harmful effects) and other rules and norms having the purpose of preventing a negative influence upon the health of people;

by the State Motor Vehicle Inspection of the Ukrainian Ministry of Internal Affairs and by its local organs, insofar as concerns observance of the norms for the concentration of pollutants in exhausts and on the

harmful effect of physical factors, established for the corresponding type of motor vehicle transport and agricultural equipment;

by other state organs, as well as by organs of local self-management, in accordance with Ukrainian legislation.

Article 40. Production Control Over Protection of Atmospheric Air

Production control over protection of atmospheric air is carried out by enterprises, institutions, organizations and other organs in the course of their economic and other activity, if it harmfully affects or may affect the state of atmospheric air.

Enterprises, institutions, organizations and other organs are obligated to maintain control over the planning, construction and operation of structures, and apparatus for the removal of pollutants from discharges into atmospheric air and for reduction of the harmful effect of physical and biological factors, over provision of instruments to them necessary for continual surveillance of the effectiveness of waste treatment, over observance of the norms on discharges of pollutants and on the levels of the harmful effect of physical and biological factors, and over observance of other requirements of legislation pertaining to protection of atmospheric air.

Article 41. Public Control in the Area of Protection of Atmospheric Air

Public control in the area of protection of atmospheric air is carried out by public environmental protection inspectors in accordance with Article 36 of the Ukrainian Law "On Protection of the Natural Environment."

Section VIII. State Records and Monitoring in the Area of Protection of Atmospheric Air

Article 42. State Records in the Area of Protection of Atmospheric Air

The following are subject to state record-keeping:

objects which harmfully influence or may influence the state of atmospheric air;

volumes of atmospheric air used as a raw material in basic production;

the forms and volumes of toxic substances released into atmospheric air;

the forms and dimensions of harmful influence of physical and biological factors upon atmospheric air.

State records are maintained on the basis of criteria determined:

- as regards discharges of pollutants into atmospheric air and use of atmospheric air as a raw material in basic production—by the Ukrainian Ministry of Environmental Protection;

- as regards the harmful effect of physical and biological factors upon atmospheric air—by the Ukrainian Minister of Health.

The state maintains records in the area of protection of atmospheric air on the basis of a unified system in accordance with a procedure determined by the Ukrainian Cabinet of Ministers.

Article 43. Monitoring in the Area of Protection of Atmospheric Air

Collection, processing, storage and analysis of information on the state of atmospheric air are carried out within the framework of a unified system of state monitoring of the natural environment by organs of the Ukrainian Ministry of Environmental Protection, the Ukrainian Ministry of Health, the Ukrainian State Committee for Hydrometeorology, and by enterprises, institutions and organizations engaged in activities that worsen or may worsen the state of atmospheric air.

Section IX. Violations in the Area of Protection of Atmospheric Air, and Liability for Them

Article 44. Violations of Legislation on Protection of Atmospheric Air

Violations in the area of protection of atmospheric air include:

violation of the right of citizens to ecologically safe atmospheric air;

exceeding the limits and norms for maximum permissible discharges of pollutants into atmospheric air;

exceeding the norms of maximum permissible levels of the harmful effect of physical and biological factors upon atmospheric air;

discharges of pollutants into atmospheric air and use of atmospheric air as a raw material in basic production without the permission of state organs specially empowered to grant such permission;

carrying out unlawful activity negatively affecting weather and climate;

introducing discoveries, inventions, efficiency proposals, new technical systems, substances and materials, and purchasing from foreign countries and operating production equipment, transportation resources and other objects that do not satisfy the established requirements on protection of atmospheric air;

violation of the rules of stockpiling and salvaging industrial and domestic wastes, and transporting, storing and using plant protection resources, plant growth stimulants, mineral fertilizers and other preparations that pollute atmospheric air;

planning and construction of facilities in violation of norms and requirements pertaining to protection and use of atmospheric air;

failure to fulfill instructions and orders of organs responsible for state control in the area of protection and use of atmospheric air;

refusal to provide timely, complete and accurate information on the state of atmospheric air and on sources of pollution, as well as concealment or distortion of information on the ecological situation resulting from pollution of atmospheric air.

Liability for other violations pertaining to protection and use of atmospheric air may also be established by Ukrainian legislation.

Persons guilty of violating legislation on protection of atmospheric air bear liability in accordance with Ukrainian legislative acts.

Disputes regarding protection and use of atmospheric air are resolved in accordance with a procedure established by Ukrainian legislation.

Article 45. Compensation for Damages Resulting From Violation of Legislation on Protection of Atmospheric Air

Enterprises, institutions, organizations and citizens are obligated to compensate for damages resulting from violation of legislation on protection of atmospheric air, in accordance with a procedure and in amounts established by Ukrainian legislation.

Section X. International Relations

Article 46. Participation of Ukraine in International Cooperation in the Area of Protection of Atmospheric Air

Ukraine takes part in international cooperation in the area of protection of atmospheric air in accordance with Ukrainian legislation and international treaties ratified by Ukraine.

If international agreements establish rules other than those contained in this Law, the rules of the international agreement apply.

[Signed] President of Ukraine L. Kravchuk
Kiev, 16 October 1992

Decree of the Ukrainian Supreme Soviet on Enactment of the Ukrainian Law 'On Protection of Atmospheric Air'

The Ukrainian Supreme Soviet resolves:

1. To enact the Ukrainian Law "On Protection of Atmospheric Air" from the day of its publication, and articles 10, 30, 32, 36, and as regards the use of atmospheric air as a raw material in basic production—articles 6, 31, 33, 37, 42 and 44—as of 1 January 1995.

2. That until legislation is brought into correspondence with the Ukrainian Law "On Protection of Atmospheric Air," legislative and other normative acts are applicable insofar as they do not conflict with this Law.

3. That the Ukrainian Cabinet of Ministers is to:

prepare proposals on amendments and supplements to Ukrainian legislative acts ensuing from the Ukrainian Law "On Protection of Atmospheric Air" and submit them to the Ukrainian Supreme Soviet for examination;

prior to 1 January 1993, reconcile decisions of the Ukrainian government with the Ukrainian Law "On Protection of Atmospheric Air";

in the course of 1 year from the day of adoption of the Ukrainian Law "On Protection of Atmospheric Air," ensure development and approval of normative acts in accordance with the competency of the Ukrainian government, as determined by the indicated Law;

provide for review and repeal of normative acts conflicting with the indicated Law by Ukrainian ministries and departments prior to the end of 1992.

4. To recognize as null and void the 21 November 1981 Ukrainian SSR Law "On Protection of Atmospheric Air" (VEDOMOSTI VERKHOVNOGO SOVETA USSR, No 49, 1981, Article 833).

[Signed] Chairman, Ukrainian Supreme Soviet, I. Plyushch
Kiev, 16 October 1992

Ukraine: Rukh National Ecological Security Program

93UN0428A Kiev *NARODNA HAZETA* in Ukrainian
No 46, Nov 92 pp 4-5

[Article by Yu. Kostenko, I. Zayets, and Yu. Ruban under the rubric "On the Rukh Program": "National Security of Ukraine"]

[Excerpt]

III. Ecological Security

Ukraine is facing a profound ecological crisis caused by excessive pressures of technological origin in its industrial regions, and the Chernobyl disaster. The loss of natural environments favorable for the settlement of people makes the problem of ecological security one of the most serious problems, in the absence of solving which the danger of the indigenous ethnic formation dying out exists. At present, it is impossible to talk of national security in earnest in the absence of due ecological security. In the international dimension, ecological security ensures a more productive basis for cooperation and the development of lifestyle activities than military security because it calls for pooling efforts to preserve the common ecological values of the people. Military security is based on competition and on augmenting the military might of certain countries at the expense of other nations, whereas ecological security cannot be achieved unilaterally. It calls for truly stable relations between states.

Within the system of national security, the nature of ecological threats is either intentional (ecological aggression) or unintentional (cross-border pollution).

1. Safeguards Against External Ecological Aggression

Rendering ecological aggression—deliberate impact on the quality of the natural environment—impossible is envisaged by a number international treaties which prohibit the deliberate manipulation of natural processes (the dynamics, form, or structure of Earth or space), military attacks on dams, dikes, and nuclear power stations, the use of biological agents in warfare, and some other things.

With a view to neutralizing such threats it is necessary:

- to have the Supreme Soviet of Ukraine ratify all international Conventions and Protocols which rule out the possibility of effecting ecological aggression;
- to seek the signing of the international documents on ecological security by all states of the world;
- to facilitate the creation of ecological alliances of states to ensure ecological security at the regional and global levels;
- to organize reliable protection from sabotage and natural phenomena for especially dangerous facilities.

2. Prevention of Unintentional Influence on the Natural Environment of Ukraine

a) Influence of global ecological problems.

The following types of global ecological dangers are possible: climate changes, the rising of sea levels, the growth of the incidence of skin cancer caused by an increase in ultraviolet radiation and so on, and the appearance of ecological refugees as a result of global changes.

The following are needed to neutralize these threats:

- the development of a projection of the possible consequences of the influence of global ecological problems on the economy of Ukraine;
- the development of national measures to adapt the national economy to global changes in the natural environment;
- participation in the implementation of international agreements on preventing global changes in the Earth's climate.

b) Prevention of cross-border ecological problems.

The following are the most dangerous cross-border ecological problems:

the transfer of pollutants by atmospheric streams affecting the condition of the national economy, pollution of water in border rivers, epidemics and illnesses spreading across the border, large-scale catastrophes of

technical origin, transportation through our territory, import, or burial of particularly dangerous, toxic, and radioactive wastes, and some other problems.

The following are needed to avoid these dangers:

- the development of measures aimed at minimizing the damage caused by cross-border ecological problems;
- the development of a system for the calculation of damage caused by cross-border ecological problems and the signing of special agreements with adjacent states in this area;
- the signing by Ukraine of pertinent conventions and protocols concluded within the framework of the United Nations Economic Commission for Europe;
- participation in the development and execution of agreements concerning border rivers and seas.

3. The Threat to Ecological Security Posed by the Nonecological Development of the National Economy

The following dangers are possible: the influence of pollution of a technical origin on the health of the populace, the degradation of ecological systems, damage to open structures and monuments of culture, the emergence of zones of social tension, the appearance of ecological refugees, conflicts, and so on.

The following measures are proposed:

- the pursuit of a strong ecological policy which includes the conservation of the natural environment and biological diversity, and stable socioecological development with effective economic, legal, and organizational arrangements for managing the ecological risk.

Ukraine: Green Party Declaration Questions Government Policies

WS1301134193 Kiev KHRESHCHATYK in Ukrainian
12 Dec 92 p 2

[Text of the declaration of the Ukrainian Green Party attributed to the party's Political Council: "Declaration of the Ukrainian Green Party With Regard to the Actions of the Ukrainian Cabinet of Ministers"]

[Text] The prime minister's report to the legislature underscored the sad consequences of economic management in the independent Ukraine over the past year. There are no doubts about the gravity of the situation and the need for radical measures to improve it. There is no need to question the government's resolve to steer a determined course. At the beginning of this course, however, it important to focus on methods that in our opinion are flawed and potentially dangerous.

The political activities of parties, regardless of their orientations, are not the cause but the effect of economic instability and the government's inability to ensure a proper functioning of the social organism. The prime minister's drive to curtail such activities, combined with

the rapid expansion of the powers of the executive branch, jeopardizes the democratic process. One can apply drastic measures as an excuse for everything, but there is little that one can really justify by such measures.

The fact that the report failed to even mention the catastrophic environmental situation caused deep concern and anxiety in the Green Party. The premier, as his predecessor, ignores the relationship between the economy and the ecology. Nothing can be good in economic terms if it is not good for the ecology. Today's profits may turn into heavy losses inflicted through long years of decontamination and cleanup. Survival at the expense of the future generations is a near-sighted policy, let alone the ethic and moral side of the matter.

The report kept silent about the conversion of the military-industrial complex, which could boost economic transformation. We hope that the head of the Cabinet, who denounces "clannish" and "narrow-corporate" attitudes, does not embrace the interests of the same groups.

Wishing the new Cabinet successes in overcoming the economic crisis in our country, we wish to reiterate that only a balanced development based on democratic institutions will place Ukraine in the proper place in the world community.

Ukraine: International Competition on Saving Chernobyl Under Way

Second Conference Held

*WS1201133593 Kiev KYIVSKA PRAVDA
in Ukrainian 10 Dec 92 p 1*

[Report by N. Vasylyuk: "What Will Be the Fate of the Sarcophagus?"]

[Text] This was already the second conference at the press center of the Ukrainian Ministry of Foreign Affairs dedicated to the competition for the best technical idea for turning the "Shelter" of the Chernobyl nuclear electric power station [AES] into an ecologically clean system. H. Hotovchyts, minister for the Protection of the Population From the Chernobyl AES Accident Aftermath, and leading scientists from the Ukrainian Academy of Sciences dealing with this problem, were present.

In June, the conditions were announced for the international competition for the most efficient project to ensure that the "Shelter" is ecologically clean. In July, government delegations of Ukraine, Russia, and Belarus, 20 companies from the world's leading nuclear states, and representatives of the International Atomic Energy Agency gathered to discuss details. By now the organization committee has received 330 applications for participation in the competition with 179 official project proposals.

On 1 December, the first round of the competition was held in the United States. Twenty-four international companies attended. However, the competition revealed certain problems. For example, the organization committee started receiving proposals to extend the period for submitting applications. It was also revealed that the project's costs had not been determined, and the matter of financing the preliminary stage (that of the preparation of the projects) had not been resolved. The governments of Great Britain, France, and Germany took care of their companies, the rest had to count on their own resources.

The issue of the "Shelter's" reconstruction was first raised in 1990, but the proposals were considered dangerous. There existed a project for spreading a thick layer of concrete over the radioactive mass of reactor No. 4, or turning the site into a "green lawn", not taking into consideration that Ukraine did not have a nuclear waste dump of its own. Today's vision of the sarcophagus is absolutely different. It should become a safe system, able to operate for 100 years, with a possibility of control and research. We will have to wait for the final project.

French Submit Proposal

*WS1201133393 Kiev KHRESHCHATYK in Ukrainian
12 Dec 93 p 3*

[Article by Valeriy Novsvitniy from the "Echo of Chernobyl" column: "The French Variant"]

[Text] The French offer a comprehensive solution to the problem: not only should a new protective shell be placed over the entire sarcophagus, but also a plant should be built nearby that would diffuse, decontaminate, and store radioactive wastes. The company's public relations director, Pierre Capet, acquainted journalists with the project; the official bid will be sent to the Ministry of Chernobyl [Minchornobyl] after 31 December, the closing day for the international tender contest.

One of the priority objectives for Campenon Bernard is the construction of a hermetic shell under the No. 4 reactor. Then, they would drive concrete slabs into the ground to lay the foundation of the future plant, followed by the erection of yet two more shells protecting the engine-room and the sarcophagus.

The construction technology will provide protection for workers against radiation. The shell consists of prefabricated blocks—hollow concrete cubes—which are placed on the edge of the foundation, and after that, an automatic device delivers those cubes to the specific areas in the future shell.

The device moves down the rails laid by it. The cubes are hollow, with the pressure inside higher than the atmospheric pressure. This is why the radioactive particles cannot penetrate inside even when the cubes become depressurized.

Thus, in the first stage of construction, a plant will be built to dismantle the No. 4 block. Inside, over the existing "Ukrytya" [shelter] installation, a bridge tank crane, with a hoisting capacity of 200 tons, will be fixed. It will dismantle the sarcophagus and the reactor and move the equipment, including outside of the sarcophagus. Electricity-operated excavators, micro-explosion equipment, and other devices will fracture the sarcophagus, and pulverize and dump the hardened radioactive mass into a collector. To prevent stirring up radioactive dust, there are plans to fill the reactor's inside with sand. A pump is being designed that would "swallow" the dust and fist-sized particles. A similar pump has already been used to clean the fall-out from nuclear test rings in France.

Given the high level of radiation inside the sarcophagus, the mechanisms that would dismantle it will be equipped with a hydraulic engine instead an electric one, and carry out the operator's commands transmitted through the electric cable. The operator himself will monitor the functioning of mechanisms from a stationary lead booth with the help of video cameras.

After the pulverized radioactive reactor and sarcophagus fractures get into the collector, a special sorting mechanism will divide them into three categories according to the level of their radioactivity. The most dangerous will be melted together with glass, packed in steel containers, and stored in special rooms under permanent control. Less radioactive mass will be kept in hermetically sealed metal barrels and located in special concrete modules placed near the ChAES [Chernobyl Nuclear Power Station], covered with layers of clay and green plants. A furnace is planned to be installed inside the plant that would remelt the radioactive metal to manufacture barrels and containers, which will be used to store wastes from the No. 4 reactor.

In the opinion of the company's finance director, Jean-Marie Auste [spelling of name as transliterated], the building of a protective shelter around the existing "Ukrytya" installation and a reactor-dismantling plant will cost at least 1 billion francs, or about \$200 million. The French Government pledged financial aid to the company, and has already partially covered the pre-design research. In addition, Jean-Marie Auste established contacts with the management of the EEC, EBRD, and the World Bank. It is quite possible that they will finance not only the dismantling of the Chernobyl reactor, but also the building of the above mentioned plant.

As to the terms, the company representative said that it would take a year to thoroughly study the situation at the station, one more year to develop a project, and five years to launch the reactor-dismantling plant, which, in turn, will be in operation for another 15 years.

This is virtually all that the French friends wanted to acquaint the public with. We are not experts and will refrain from evaluating the project. It is experts who will

have the final say. We would like only to note the approach of the Western specialists to solving the problem.

All in all, a strange situation is developing: the international contest has already lasted more than a year, but this presentation was among the first to come in. Why? Either the Minchornobyl and the Ukrainian Government are too slow to publicize the contest—after all, this matter concerns not only its participants (then that would cast some more light on the scandal over another French company, Bouigue, mentioned by Volodymyr Yavorivsky in his speech to the legislature)—or alternative projects simply do not exist, what is very unlikely. Or, perhaps someone thinks that the inhabitants of Ukraine could not care less about the fate of the still dangerous reactor No. 4?

Ukraine: Officials Dismissed for Nuclear Waste Storage Violations

*OW0501200993 Moscow INTERFAX in English
1941 GMT 5 Jan 93*

[Following item transmitted via KYODO]

[Text] Georgiy Gotovchits, minister for the protection of the population from the consequences of the Chernobyl atomic power station catastrophe, dismissed Boris Kucherenko and Vitaliy Cherednichenko, the director and the chief engineer of the Kiev interregional special plant "for repeated cruel violations during the storage of nuclear wastes." This information was received by INTERFAX from the press service of the Kiev state administration on Tuesday [5 January].

The plant for the storage of radioactive wastes is situated 5 kilometers from Kiev in the village of Pirogovo along the gliding pattern of the airport Zhulyany. It was built in 1956 and according to several public organizations and independent experts, does not satisfy the security requirements. Gosatomenergondzor, the Ukrainian General Prosecutor, the presidential representative in Kiev, the trade unions, and the 'Greens' party stand for its closing.

Ukraine: Ministry Sees Need for Further Evacuations From Chernobyl Zone

*OW0601204893 Moscow INTERFAX in English
1903 GMT 6 Jan 93*

[Following item transmitted via KYODO]

[Text] The session of the Ministry on Protection of the Population From the Consequences of the Catastrophe at the Chernobyl Atomic Power Station held on Wednesday [6 January] declared that more than 10 thousand families should be moved from the contaminated zone. The representatives of local administrations, ministries, and departments participating in the liquidation of the aftermath attended the session.

The participants of the session supported the idea of a competitive selection of subcontract organizations to build the living houses for the settlers and to additionally stimulate the builders.

CAUCASUS/CENTRAL ASIA

Rise of Caspian Sea Requires Scientifically Sound Response

93WN0223A Moscow TRUD in Russian 6 Jan 92 p 4

[Article by Tunzale Kasumova, Baku: "Taking Dictation From the Sun. How Much Longer Will the Caspian Sea Advance on Land, Flooding Still New Localities?"]

[Text] The disaster struck unexpectedly. It appeared that just the day before, learned men and statesmen had wracked their brains over arresting the catastrophic recession of the Caspian Sea, had developed ever more grandiose drafts, and had even succeeded in implementing some. Meanwhile, the sea, which lives by its own laws, began to advance, and within a short period of time it had managed to swallow up hundreds of thousands of hectares of plowed and built-up land on its perimeter.

Nobody knows how long the Caspian Sea will continue to rise, and to what level. According to some projections, it will rise for a year or two, and not by more than a meter. According to other projections, it will do so until the end of the century at least, and by about seven meters. It is impossible to conceive of the catastrophe with which this threatens the entire densely populated shore of the Caspian Sea, within the borders of five states.

Many hypotheses exist which explain why the sea is "growing." Thus, the prominent scientist Lev Nikolayevich Gumilev argued, as early as 20 years ago, that the situation with the Caspian Sea cannot by any means be considered in isolation from the Aral Sea, because processes occurring in them are interconnected: When the level of one of the bodies of water drops, the level of the other rises. Periodic climatic changes, or more specifically, Atlantic cyclones, are the reason for this, rather than an underground river which supposedly flows alternatively in both directions. If the cyclones move on to the forested zone, the Volga-Caspian Basin receives moisture, and if they move on to the steppe zone, the Aral Basin does.

There is convincing proof for attributing changes in the Caspian Sea to meteorological factors. Naturally, the Caspian Sea, 80 percent of whose water balance consists of the inflow from the Volga, cannot but depend on the size of its runoff. In turn, high levels of water in the Volga hinge on weather in its tributary areas. This is also bolstered by empirical data: The charts of the indicators of the Volga's runoff and the level of the Caspian Sea in the last 150 years clearly reflect this dependency.

Here is another research project. Under the direction of Ramiz Mamedov, the staff of the Institute for Problems of the Caspian Sea at the Institute of Geography of the Academy of Sciences of Azerbaijan produced charts of fluctuations in the level of the Caspian Sea which almost coincide with the charts of solar activity in 11-, 35-, 120-, and 480-year cycles. A gradual rise in the level of the Caspian Sea, which has now reached the mark of 27 meters below the level of the World Ocean, has been registered since 1976. According to R. Mamedov's projection, the rise will continue until 1997 and will amount to yet another meter. Later, the sea will recede again, reaching the lowest mark on shore in the recent 100 years by the year 2077.

Will these projections be taken into account in the course of the struggle against the elements which has already begun? Or will the mistake of the past be repeated as when, despite warnings by scientists concerning the forthcoming rise of the Caspian Sea, intensive development began of the land left behind by the sea? Billions of rubles were spent. At present, incomparably more will have to be invested in order to protect all built-up and farmed areas from that same sea. Any of the projects proposed to rescue the Aral Sea will also call for colossal funds and labor. Could it be that we should not hasten decisively to interfere with nature every time it seems to us that it is "misbehaving"? Could it be more feasible to use the approach to the issue from the point of view of historic experience, which was proposed by Gumilev? After all, such things have happened many times in the past. Gumilev reminds us that, in the first century, Atlantic cyclones carried moisture across the southern steppes and poured it on the mountain ranges of Tarbagatay, Saur, and Tyan-Shan, from which points it flowed to Balkhash and the Aral Sea through rivers. However, in the middle of the second century, the path of the cyclones shifted to the forested zone, which caused the Aral Sea to become shallow and the Caspian Sea to rise by three meters. A century later, the cyclones shifted even still further north. As the great drought intensified, the Aral Sea dried up to such a degree that it turned into the "Oksiya Swamp" overgrown with reeds.

Gumilev writes that this calamity lasted for 200 years. Later, cyclones and monsoons returned to the steppes, filling their rivers and lakes with water. Is this to say that we should be patient for a long two centuries? Of course not, first of all because, thank God, there are no signs of a great drought. The current ecological catastrophe of the Aral Sea, though due to objective causes, has been stimulated and aggravated by man, by his unwise economic operations. The growth of the amount of water in the Caspian Sea has also been greatly accelerated, due to the fact that a film of oil that covers a large proportion of the water area is reducing the natural evaporation of water. In the opinion of Askar Mamedov, chief of the sector of climatology at the Institute of Geography of the Azerbaijan Academy of Sciences, it is necessary to make a determination with regard to the main issue before we embark on the development of any projects—what level

should be considered optimal—so that subsequently we can focus the thoughts of our scientists and practitioners on opportunities to maintain this level. However, not only a single laboratory or institute, but even a single state cannot solve a problem of this scope. That the Caspian Sea has now become a sea of five independent states is not the only point. In light of Gumilev's scientific conclusions, the problem of the Caspian Sea cannot be considered in isolation from processes occurring in the Aral Sea. This means that the number of interested parties increases immediately. However, this is so only in theory. Actually, each state struggles on its own with the puzzle that nature has slipped us. Scientists believe that an interstate center should be created immediately, and that the entire intellectual potential of the extensive Caspian-Aral region should be used.

Kazakhstan: Azgir Nuclear Test Range Health Risks Assessed

934A0546A Alma-Ata KAZAKHSTANSKAYA PRAVDA
in Russian 23 Oct 92 p 2

[Interview with A. Bigaliyev, professor at Kazakhstan State University and I. Chastnikov, corresponding member of the Kazakhstan Academy of Sciences, by S. Krymova; place and date not given: "The Bomb Is Armed. Some Details on Another Test Range"]

[Text] It would appear that nothing could surprise Kazakhstan citizens after they found out about the Semipalatinsk nuclear test range. But no, that cup is evidently bottomless.

Here is the address of another disaster—the "Azgir" Test Range in Atyrau Oblast. Its code designation is "Southern Seismic Expedition." The mask was ripped off this seemingly innocuous project after, on insistence of the public, the government decided to conduct an "inventory" of those areas where atomic explosions were heard in past years. A map of the nuclear wounds of Kazakhstan was published on which the designation—"Azgir" surfaced among others.

Over 17 nuclear explosions were accounted for by the so-called "seismologists" in the city of bomb builders "Arzamas-16." Tests started in the middle sixties. The first underground explosion took place at a distance of just one kilometer from the village of Azgir at a ridiculous depth of 165 meters. Some 100,000 curies of radioactive particles were thrown to the surface.

The government commission which recently visited the test range conducted a survey of the test areas and adjoining territories. The data is being processed and we will not attempt to guess what the conclusions of that commission will be. One thing is clear: we are talking here about the health of people who are exposed to daily hazards.

The following conversation took place on this topic between our correspondent and Professor of the Kazakhstan State University Aytkozha Bigaliyev, president of

the Problem Committee of the "Nevada-Semipalatinsk" Antinuclear Movement and a member of that committee Ivan Chastnikov, corresponding member of the Academy of Sciences of Kazakhstan.

[Bigaliyev] The first thing that amazed us at the test range was the attitude toward observance of radiation security rules. Work is under way there at present to bury the contaminated dirt. The territory of the detonation sites is not fenced, there are no guards, there is no vehicle decontamination point, the ground is not covered, and the dirt is carried on wheels of the vehicles throughout the region.

[Chastnikov] There are even no signs indicating radiation danger. Anyone can walk up to the shafts, it is possible to drop something in the crater.

[Krymova] *Are the shafts exposed?*

[Chastnikov] That is the point! Just imagine. A pipe a meter in diameter is sticking up and there is no barricade! Sheep are grazing next to it, cows are lying, chewing their cud, scraps off some structures are lying around, pieces of pipe. Just come and help yourself. Which is exactly what is being done by local residents when they need some iron scrap for household use.

[Krymova] *How dangerous is that?*

[Bigaliyev] Recultivation, even though it was carried out poorly, still helped to diminish the danger. Checks of the gamma background indicated, however, that radioactive patches remain in the area. Around the shaft, for example, where we were told "everything is clean," we discovered two patches. Dosimeters gave a reading of from 9,000 to 25,000 microroentgens per hour!

[Krymova] *With a norm of up to 15 microroentgens?!*

[Bigaliyev] In response to my question on what measures for the protection of health of the people and the environment were envisaged in the course of the experiments, the head of the Kushnir Test Range declared that it is necessary to ask "Arzamas-16" which was not the job of the test range workers.

[Chastnikov] At the same time the documents signed by heads of the experiment ("Arzamas-16" enterprise) and by the responsible workers of the former Ministry of Medium Machine Building clearly state that all experiments were conducted "with observance of all norms of radiation security." Who was that written for?

[Krymova] *Is that the case in all of the detonation sites?*

[Chastnikov] Of course. There is a total of 12 of them, ten were used and five of them are concreted. It is not known what is inside. One of the shafts was used for seven detonations! They would conduct one, then a certain time later, a second one, then a third one. What was that done for? I think the cavities may have been used to bury radioactive materials. The overall volume

of cavities produced by the detonations at "Azgir" comes to more than one million cubic meters. A lot can be hidden in them...

[Krymova] *Not just radioactive materials but dangerous chemicals as well! Considerable funds are required for their disposal under ordinary conditions, along with time, and technological discipline. Here, however, everything was much simpler: "the dirt" was tossed into a shaft, a nuclear explosion follows, and the "chemicals" are destroyed. It is said they are building a canal for that purpose from Volgograd Oblast?*

[Bigaliyev] We travelled several tens of kilometers along that canal. It is 10 - 12 meters wide, with a depth of approximately three to four meters. It starts in Volgograd Oblast, and as commonly known, there are many enterprises with harmful types of production over there. The canal is over 1,500 kilometers long. It extends into the Naryn sands. If they start dumping chemical waste into it over there an ecological catastrophe is inevitable—the Naryn Nature Preserve, founded by Zhan-gir Khan, is doomed.

There is fresh water below the sands at a depth of a meter-and-a-half. An oasis appeared in the desert because of it. In the past the area of this preserve was 157,000 square kilometers. With the opening of the test range it shrank to 16,500. Unique forests keep the sands from advancing. If the dumping still takes place the trees will perish in one to two years at the most, and the sands will surge forward and join with the sands of Aral.

[Krymova] *At what stage is the work on the canal?*

[Bigaliyev] It is practically finished. When we were there, there were only some 30 kilometers to be dug. Work was being rushed. The builders realized that as long as local authorities remained agreeable it was necessary to hurry. After the canal is completed, it is just a matter of a few days to flush the dirt, and after that, let them make noise, sue in court, it does not matter since all this cannot be undone.

[Krymova] *Why did the local authorities agree?*

[Bigaliyev] Agreement was obtained in exchange for a promise to install gas and electricity lines here.

I feel confident that this outrage must be halted immediately. A team of independent experts should be dispatched to the test range. In addition to emergency measures to fence off the dangerous areas, it is necessary to analyze ground water, which was not done by the commission. According to certain data, however, the wells which are used for drinking water by local residents, according to observations have an elevated content of thallium, a uranium decay product.

[Krymova] *Where do the test range personnel get their drinking water?*

[Bigaliyev] It is brought in. They travel 70 kilometers to Astrakhan Oblast for it.

Here is another point requiring immediate attention. The sands of Naryn are now the site over which missiles launched from Kapustin Yar test range are shot down. Including ones with nuclear warheads. We travelled about 160 kilometers in one direction and an equal distance in the opposite direction over the sands of Naryn. We saw fragments of missiles everywhere. They are encountered every three to four kilometers.

[Chastnikov] When we flew over in a helicopter I noted the time: in 15 minutes I counted 35 missiles!

[Bigaliyev] Local residents use this debris in their homes. In cases where the fuel compartment is undamaged they pour the fuel out of it, due to their ignorance, for use in their kerosine stoves. They say it burns well! They have no way of knowing that combustion generates a lethal poison—dioxin. It is impossible to remain silent about all of that!

In Lieu of an Epilogue

As long ago as in December 1989 at an off-site session of the general assembly of the Academy of Sciences of Kazakhshtan, which took place in Guryevo, the presentations that were heard repeatedly raised the question concerning the unfavorable ecological situation in Western Kazakhstan, and the Ministry of Medium Machine Building came under criticism. It was noted that an accumulation of harmful substances is taking place in human food, in vegetation, and in the organisms of living creatures. There was speculation that people here were subjected to irradiation at one time.

In 1990-1992 scientists from the St. Petersburg Pediatrics Institute conducted a study of the health of the population on the basis of an economic contract on request of the test range. The scientists noted an increased incidence of cancer in regions adjoining the "Azgir" Test Range. An increased level of a disease such as anemia among children in the village of Azgir also attracts attention.

The very first acquaintance with the activity of the test range made it possible to conclude that the environment suffered from the underground testing of nuclear weapons, along with the population of Atyraus and Zapadno-Kazakhstan oblasts of Kazakhstan, as well as of the Astrakhan and Volgograd oblasts of the Russian Federation.

A report was received in the last few days indicating that the head of administration of Atyraus Oblast decided to close military test ranges on the territory of the oblast. As of 1 January 1993 use of military armament on them will be prohibited. Scientific research work, however, may continue as before. But while the huge salt domes on the territories under the jurisdiction of the "Southern Seismic Expedition" stay empty, the address of disaster remains as before—Azgir!

Kazakhstan: Military Test Sites Disrupt Economic Development, Environment*93US0224A Moscow PRAVDA in Russian 15 Dec 92
p 4*

[Article by Dmitriy Gutenev: "What We Know About the Test Ranges"]

[Text] The CIS joint forces are honing their military skill at the missile test ranges in West Kazakhstan. And, judging by recent exercises at the Emba test range, they have been successful. Targets simulating ballistic and cruise missiles were hit with an accuracy several times greater than that of the missiles used by the allied forces during the Persian Gulf war. This reliable protection ought to be a cause for rejoicing. But it is not. One missile fell 80 meters short of the building which is the home of T. Mukashev and B. Balmagambetov, horse-herders at the Guryevskiy Stockbreeding Farm in Atyrau Oblast. A crater about 8 meters deep now gapes where the missile exploded. The steppe is scorched for 50 meters around. And what about the shock which 15 persons experienced upon observing death heading in their direction?

"Guests from the sky" were not the only things accepted by the local inhabitants when the test ranges were set up like prickly thorns in their own bodies. Beginning in 1947, in accordance with decrees issued by the USSR Council of Ministers with the consent of Kazakhstan, test ranges were established near Kapustin Yar and Embe in Guryevsk, Uralsk, and Aktyubinsk oblasts, and 6.4 million hectares of hayfields were taken out of circulation. Furthermore, so much equipment has been smashed in the surrounding areas that one constantly encounters unremoved remnants of targets and missiles.

Local inhabitants had to be moved out of other territories. They were promised compensation in exchange, whereas the entire region was assured that it would be prosperous. Alas! The millions of rubles which were invested in scientific research projects by the defense industry in no way reached the local population. Even now there is no electricity or gas in their wretchedly poor dwellings. At the time when the steppe-dwellers were forbidden to build any major structures, the zone of the test ranges blossomed with mirage-like cities which were not included on the maps. They had all the urban amenities and fine roads.

The differences in the living conditions are so obvious and striking that mistrust has been aggravated between the two groups. Acts and directives have been dumped here by state organs and public organizations. There are increasingly newer traces and direct evidence of a barbaric attitude toward the land....

A. Bigaliyev, chairman of the Problem Committee of the anti-nuclear movement known as "Nevada-Semipalatinsk," cites the following melancholic fact. The area of the Narynsk Preserve, which was founded back in the last century in the sands of the same name, has been catastrophically reduced. Deposits of fresh

water—which are only 1.5 meters deep here—helped forests to grow, including pines and birches. The area of this oasis used to amount to 157 square kilometers. With the opening of Kapustin Yar, it was reduced to 16,500. And it is here that a wastewater drainage canal from Volgograd Oblast is being constructed at an accelerated pace deep into the interior of the Narynsk sands. If the wastewaters from industrial enterprises are dumped here, the last trees will perish. The route to the Aral Sea will be opened to the sands.

Only a few people nowadays know that at one time Kazakhstan—for "national-economic" goals—thundered with 38, not counting Semipalatinsk, underground nuclear explosions at 27 sites. Of these, 25 occurred in Atyrau (Guryev) Oblast and West-Kazakhstan (Uralsk) Oblast. Tests were conducted in masses of rock salt, or in the so-called salt domes. Moreover, such tests were often performed in dangerous proximity to housing settlements which were engaged in developing and working deposits of hydrocarbons. Gigantic spherical cavities were formed underground, and these could be used as storage facilities. There were six such facilities at the Karaganda gas-condensate deposit. They were intended to be used as accumulation points during stoppages or interruptions in receiving gas condensate in Orenburg. But nobody thought that, merely by adding some substance except for hydrogen sulfide, condensate could be obtained.

Azgir is another place where there has been trouble. The first explosion during the mid-1960's by "seismologists" from Arzamas-16 was carried out at a distance of one kilometer from this settlement in the southern part of Atyrau Oblast at a depth of only 165 meters. Some 100,000 curies of particles were thrown up to the surface. A government commission which recently visited there discovered that the territory of the sites where deactivation is going on has not been fenced off. As KAZAKHSTANSKAYA PRAVDA has written, five of the ten wells where the explosions were conducted are now open. Livestock graze and people walk nearby.

The total volume of the underground capacities formed here exceed a million cubic meters. A great deal could be hidden in them, including radioactive wastes. The activists from the anti-nuclear movement are unable to obtain answers to the question of what is being stored under the concrete "corks." People are agitated by conjectures and fantastic suggestions. In some places there has been an increase in diseases among the local residents; in other localities plague has occurred among domestic and wild animals, while in still other places melons have not ripened—everything is ascribed to the military department.

"At the same time, however," says Professor A. Zhukovskiy of St. Petersburg University, whose group spent a year working in the zone of Azgir and Toysagan, "it is impossible to say definitively that the test ranges are guilty of this or that. Their actions must be examined and considered against the extremely unpropitious social

background of life here. There are no open ecological data with which one could compare what used to be here, and what it became. The maximum that was done previously was established by the norms of the total radiation emitted. And these were only the norms of engineering safety; they failed to take into account the interests of the local population. To this day there is no normative-judicial status guaranteeing legal protection to a person who has been subjected to radiation.

And so we know, we feel, we see that the effects of the actions performed on the test ranges are harmful. But to what extent this is so is impossible to determine specifically. But even if they are guilty to a certain extent, we still cannot punish the guilty or help the suffering on any legal basis.

So what should we do? Eliminate the test ranges entirely? But, after all, without a shield, the CIS countries would no longer have the right to be responsible to their own peoples.

In each oblast relations with the military have been constructed in different ways. The people have attempted to restrict or narrow down the territory occupied by the Emba Test Range. A portion of this land has already been returned to the Mugodzarsk and Shelkarsk rayons, whereas all kinds of testing have been halted in Bayganinsk Rayon.

The leaders and public of West Kazakhstan Oblast are attempting to obtain compensation in the form of electrification of their livestock winter stations and summer stations. The people of the Urdinsk and Dzhangalinsk rayons are seeking to have a radio-relay station built here for transmissions to the town of Turgal and the pasture lands around it, based on the example of the Urdinsk Rayon. And, in general, the defense people could function as solid, substantial partners in the joint construction of various facilities needed by the oblast.

The head of the Atyrau administration, S. Tuganbayev, has "gone for broke": He has taken the decision to close down the military test grounds in the territory of this oblast. Beginning on 1 January 1993, it will be forbidden to employ any military arms on them. Prior to this time the military people must clean the territory of any remnants of metal. To be sure, until a special agreement is reached, command centers, measuring points, and settlements will remain in place. Whether they will remain subordinate to the military under Russia's administration is still not known. They remain silent on this point. And meanwhile the missile which missed its target by eight kilometers flew to the Guryev Sovkhoz and almost caused a tragedy to occur.

Kazakhstan: Law Seeks To Aid Citizens Affected by Test Site

93WN0228B Moscow PRAVDA in Russian 10 Jan 93
p 1

[Tleuzhan Yesilbayev report: "For Those Affected by Nuclear Tests"]

[Text] Kazakhstan has passed a law "On Social Protection for Citizens Affected as the Result of Nuclear Testing at the Semipalatinsk Nuclear Test Site." These explosions thundered out for 40 years on the land of Semipalatinsk, causing irreversible harm to people's health and to nature. It is now known that they resulted in an increased incidence of disease and higher mortality rates among the population. The entire territory of the Semipalatinsk test site and rayons of Pavlodar, East Kazakhstan, and Karaganda Oblasts has been declared a zone of environmental disaster. The law defines the kinds of compensation and privileges and measures to provide for the socioeconomic development of the territory.

Kazakhstan: Semipalatinsk Tests Trigger Genetic Mutations in Altay

LD1101141793 Moscow ITAR-TASS in English
1218 GMT 11 Jan 93

[By ITAR-TASS correspondent Valentin Pavlov]

[Text] Barnaul, January 11 (TASS)—Soviet nuclear tests held at the Semipalatinsk range in Kazakhstan triggered genetic changes in the population of the neighbouring Russian Altay region, according to local researchers.

22 out of a total of 470 nuclear tests at the Semipalatinsk range affected the radioactive situation in Altay. The most detrimental was an explosion in 1962, the minimal danger was posed by a test in 1949, researchers said.

The tests were held when the wind was blowing towards the Altay region as secret instructions envisaged that radioactive clouds should not cross the southern Soviet borders. Radioactive contamination of the towns of Semipalatinsk and Kurchatov should have been avoided as well.

Small, but frequent doses of radiation resulted in a growth of oncological illnesses in Altay, the mortality rate surpassed the birth rate. In several most contaminated districts many children began to suffer from illnesses in the central nervous system.

However, specific genetic changes are the most negative consequence of the tests, Yakov Shoykhet, professor of the Altay State Medical Institute, told TASS.

"It is not the region that is contaminated, it is the people and the living environment who are carriers of the pathology", he added.

The Altay regional council decided to request the Russian parliament to adopt a special law on the rehabilitation of the regional population who suffered from nuclear tests at Semipalatinsk range.

Altay anti-nuclear organisations are supporting the demand.

BALTIC STATES**Baltic Governments Assess Military Damage to Environment**

93UN0546A Tallinn *THE BALTIC INDEPENDENT*
in English 11-17 Dec 92 p 7

[Unattributed report: "Environment Inspectors Survey Military Damage"]

[Text] If you hold a burning match too close to some streams flowing through the Tapa region of central Estonia, the water may catch fire. And if you walk upstream, chances are you will find yourself next to a Russian military installation, writes *Richard Tompsett*.

Baltic governments are just beginning to assess the impact of the Russian military's environmental legacy, as army and air force chiefs slowly but reluctantly open their doors to government inspectors.

In Latvia, where the ex-Soviet military still has around 600 installations occupying over 100,000 hectares of land, environmental officials are still barred from most military sites.

Those which inspectors have seen give an unsettling hint of the overall environmental picture.

In Uzava, the army training ground near Ventspils, over 450 hectares of forest have been destroyed in war games. Oil pollution from tanks and other hardware has destroyed or wasted soil across almost 60 hectares of land, and seaside shelling has laid waste to hundreds of metres of coastline.

Only in the last three months have Estonian environmental inspectors been able to make detailed impact reports on major installations.

According to Harry Liiv, head of the Estonian government's environmental protection unit, inspectors found over 200 "pollution sources" at Tapa military air base in central Estonia, including more than 30 tonnes of oil on the ground, and over 2,000 tonnes of waste metal.

A further 16 square kilometres are polluted by waste aircraft fuel which has seeped into natural water sources and increased water purification costs.

Lithuania: Stolen Radioactive Uranium Sunk in River

OW1201203393 Moscow *BALTFAX* in English
2008 GMT 12 Jan 93

[Following item transmitted via KYODO]

[Text] Search of the radioactive uranium continues on the bottom of the river Nevezis on the territory of the Lithuanian city of Panevezys.

The search in the river began on Saturday at the depth of 6-7 meters, when the city police learned that two uranium rods, which were stolen from the machine building plant in the town of Glazovo in Udmurtia, were sunk at the bottom of the river.

The city police established that a businessman from Panevezys purchased ten kilograms of the stolen uranium hoping to sell it abroad. When he failed to find a buyer, he sunk the dangerous stuff into the river. According to the police, the actual cost of this merchandise could amount to at least a million US dollars at the "black market".

Estonia: Official Concerned Over Unguarded Toxic Missile Fuel

WS0701130393 Tallinn *ETA NEWS BULLETIN*
in English 0843 GMT 06 Jan 93

[From 6 January RAHVA HAAL, p 3]

[Text] 6 January 1993—A fuel depot holding hundreds of tons of highly toxic missile fuel is situated at 5 kilometres from Tallinn. The Russian armed forces have not yet turned over the depot to the Estonian authorities and the territory is held by an unnamed company which is expected to guard the fuel tanks, head of Tallinn Environment Department Aap Mumme said. "Some people may attempt to get their hands on the unguarded fuel tanks," he warned. A city government and Environment Ministry joint commission visited the fuel depot yesterday. No leaks were discovered but the toxic fuel is vaporizing. The situation is complicated by the fact that the fuel depot is situated in the catchment basin of the Ulamiste Lake, Mumme said. The environment authorities are to present a memorandum to the government asking to reorganize the takeover procedures of military objects and to include representatives of environment protection agencies in the takeover commissions.

REGIONAL AFFAIRS

Feasibility of EC Plastics Recycling Directive Evaluated

93BR0191A Zellik BELGIAN BUSINESS & INDUSTRIE in Dutch Nov 92 pp 124, 127-128

[Article by Lode Goukens: "Recycling—Incineration Is the Cheapest Method"]

[Text] Incineration of plastics is the most economic recycling method.

The European directive for packaging and waste packaging materials sets high requirements. By 2004, 90 percent of all waste plastic packaging materials must be recovered and at least 60 percent of this must be recycled. An employee of Fechiplast, the association of plastics processors, stated: "Everything can be recycled as long as enough money to do it is available. The 90/60 standard, however, is not realistic."

Mrs. Schaefer from Directorate General XI (Environment) of the European Commission considers the directive to be bizarre since the principle of subsidiarity prevents a law from being directly enforced. This principle stipulates that decisions be made at the lowest possible level, i.e., by national or regional authorities.

According to Schaefer, "The Commission is now concentrating on specific types of waste which urgently require a satisfactory solution. We are not concerned with plastics or metals, but waste consisting of several materials (e.g., cars or hospital waste)."

The member states must interpret the new directives into specific or general laws. The emphasis may differ from state to state.

The decision of the French government to use the same logo as the Germans for reusable packaging shows that not all of the initiatives emanate from the EC. Moreover, the implementation of the directive is not limited to the EC only. As a result of the agreement to establish a European Economic Area (EEA) involving the EC and the countries of the European Free Trade Association (EFTA) as of 1 January 1993, Sweden, Switzerland, Norway, Iceland, Austria, and Finland will be required to modify their legislation so that it matches that of the EC.

[Box]

Subsidiarity

The European Commission is adopting a radical new course in the area of environmental policy. Since the previous environmental directive, the European Commission is only pursuing general aims. From now on, the measures will be taken by the member states themselves. In principle, the Belgian government has decided to delegate all authority for the environment to the regional level. The Flemish, Walloon, and Brussels regions have

already signed agreements with the private sector. The decision to impose national environment taxes taken by the national government thus provoked some commotion from the Prevention and Recycling Organization for Packaging Waste (PRO), an interregional consultative body.

This reaction is unwarranted as the "directive for packaging and packaging waste" is a harmonizing directive. The EC is not interested in the method used in the member states to implement the legislation. During the Lisbon summit, the EC Council of Ministers decided to adopt the subsidiarity principle (making decisions at the lowest possible level) for all future directives. One can therefore only criticize possible erosion of the competitive power and the justice of the decision.

The PRO was established by the Belgian packaging industries, OVAM [Flemish Public Body for Waste Processing], and the Flemish Ministry of the Environment. The aim of this organization is to promote the recycling of all types of packaging materials (not just plastics). The first project undertaken by the PRO is the selective collection and recycling of waste in Flemish Brabant. [end box]

More Than Enough Methods...

The most ideal method of recycling plastics is to recover the carbohydrates. This "tertiary recycling" approach is completely different from the conventional grinding and remelting process. Chemical companies such as Hoechst, BASF, ICI, and Veba use thermal and chemical processes to degrade the polymer chains of plastics. This process produces monomers which can be used as a base material. The idea is simple, but the costs are currently much too high.

For the moment, incineration remains the cheapest solution. Moreover, this process produces energy. The cost of base materials for plastics is so low that virtually no form of chemical recycling is economically viable. For the time being, however, heavily polluted waste can only be recycled chemically. Slightly contaminated plastic bottles can be mechanically processed to produce the compound "Eco" plastic. Eco is suitable for the manufacture of garden benches and poles.

Contrary to what one would assume, a recycling industry for industrial waste has been in existence for quite some time. In 1991, the business community recycled 145,000 tons (more than 30 percent of the total waste volume).

The recycling of packaging waste presents more problems. Consumers must first bring bottles to one of the 40 Flemish container parks. Then, the packaging material is sorted. Jens Sort, one of the sorting companies, sells the sorted plastics to a recycling company. Ecoplast together with Solvay process the PVC to produce drain pipes. Ravago supplies recycled polyethylene to Dow Benelux, who reuses it to package washing products for Procter & Gamble. Polyethylene materials are exported by sorting companies to Holland. At the moment, the

demand for sorted waste is higher than the supply. The Belgian sorting and recycling company Areb imports the majority of its waste from Germany.

Plastic Is a Fuel

Careful sorting of waste will not necessarily lead to better and cheaper reuse. A compressed automobile wreck is placed in a blast furnace and if it still contains plastics, these serve as additional fuel for the melting process. Plastic waste can therefore help to attain the desired temperature in the furnace. If the plastic is separated from the steel, more fuel will be required. The chemical industry claims that "thermal application" or incineration with heat recuperation is recommended for a substantial part of plastic waste because of economic and ecological considerations.

Automobile manufacturers, of course, like to present themselves as environment-friendly, but only large plastic components (e.g., bumpers and tanks) are logically reusable (that is of course, if all traces of gasoline or diesel fuel can first be removed from the fuel tank).

Unlike other plastics, composite materials can only partially be reused. First and foremost, the materials used in the composite must be determined. During the recycling process, the composites are pulverized in order to replace part of the new material.

Foam requires special treatment. The reuser can shred it into flakes or cut it up into blocks. These blocks can be glued together using polyurethane glue to make a raw material which can be used, for example in judo mats. The flakes are mainly exported to the United States where they can be used to manufacture underlay for fitted carpets. Foam can therefore be fully recycled at a very economical price.

GERMANY

Rapid Fermentation Process Provides Alternative to Composting

93MI0126A Wuerzburg UMWELTMAGAZIN
in German No 11, Nov 92 p 52

[Article by Dieter Heimig: "Alternative to Composting—Rapid Fermentation Largely Emission-Free"]

[Text] Every year, Germany produces around 13 million tonnes of organic waste and 50 million cubic meters of slurry. Composting is a means of tackling and recycling this waste for useful purposes. Though specialist journals might give the impression that this process is perfection itself, the fact is that composting, particularly of slurry and animal excrement, represents a potential environmental hazard. For example, fungal spores that can cause human allergies and infections may be emitted, and seepage, ammonia, and carbon dioxide can also have harmful side-effects.

The Federal Agricultural Research Institute at Braunschweig-Volkenrode has been investigating ammonia released in composting animal excrement: Scientists detected nitrogen losses of around 75 percent due to discharged ammonia, and increasing discharges when the end product contained too much dry matter and when the rotting temperature exceeded 50°C. In the light of their work, the institute's researchers have called for compost produced by a two-stage rotting process, the first stage of which would take place under controlled conditions in a reactor, the ammonia being extracted and bound on release. The second stage should take place in a temporarily sealed or covered pit.

Rapid fermentation is still a little-known process. The process developed by Biomes has significant environment-relevant features, and the company has already patented it in Europe and the United States. Animal excrement from agriculture and domestic sewage (slurry) have for years been reprocessed into valuable organic fertilizer using the MBCD (microbiological conditioning drying) process.

The organic matter undergoes several stages of microbiological treatment in special biofermenters. A conveyor belt first feeds the organic waste in to a processing plant, where the material, which has a moisture content of around 55 percent, is mixed with existing fertilizer, which provides sufficient quantities of the microorganisms required. The material is then compressed into pellets in an extruder, and taken to the fermentation plants, where the microorganisms go to work. The next stage is nitrogen stabilization, quickly followed by cold fermentation, biochemical disinfection, and hot rotting. The material is then dried by air jets in the fermenters, giving it 15-percent residual moisture, 24 hours after the start of the process. This stage also uses over 30 percent of the energy generated by the microbiological processes, thus keeping the power requirement for drying fairly low. The manufacturers claim that, as the process takes place at a low temperature range between 66 and 70°C, the humus-creating organisms are retained in the fertilizer produced, whereas pathogenic germs, such as salmonellae, are destroyed. This is crucial to the quality of the fertilizer. The product is now ready for sale, just two days after the start of the process.

The time factor thus gives rapid fermentation a decisive advantage over composting, which takes around seven weeks. Another major benefit, albeit not an environmental one, is that it takes up less space than composting. The MBCD process also has clear benefits with regard to ammonia emissions, as nitrogen loss from rapid fermentation has been measured at 5 to 10 percent at the most. The process also gives off only a very slight odor, normal emissions being in the 120- to 140-odor unit range (in terms of crude gas), compared with normal emissions from rotary dryers, which exceed 25,000 units.

Authorities Select Route for Ingolstadt Oil Pipeline

AU0701181593 Prague HOSPODARSKE NOVINY
in Czech 6 Jan 93 pp 1, 15

[CTK report: "A Decision Has Been Made Regarding the Oil Pipeline"]

[Text] Regensburg—The authorities in the Upper Palatinate, through which the main part of the oil pipeline from Ingolstadt to the Czech Republic will lead, have officially approved the route for the pipes and have issued the appropriate territorial decree. The regional government held a briefing in Regensburg yesterday at which it stated that the longest of the three routes proposed—leading from the refinery in Ingolstadt to the border-crossing area of Waidhaus-Rozvadov—had been chosen.

Following the territorial decree, a construction permit will now be issued; this lies within the jurisdiction of the Bavarian Labor Ministry. Important negotiations with landowners should be concluded this year so that construction work can be started on the Bavarian side at the beginning of next year and so that oil can flow at the beginning of 1995.

Erwin Simon, vice president of the Upper Palatinate regional government, gave a press briefing in Regensburg yesterday at which he explained Bavaria's attempt to contribute to ensuring problem-free oil supplies for the Czech Republic. It is also in Bavaria's interest that its neighbors have as few problems as possible in their transformation, said the Upper Palatinate's representative.

The Munich-based engineering firm ILF, which is responsible for the planning and construction of the oil pipeline in Bavaria, submitted three route proposals to the authorities. The ecologists rejected the proposed routes B and C2 because of the rich underground water supplies in the area. C4 is the longest of the three options and stretches for roughly 170 KM along German territory. The woodland region east of Neutraubling and the wetland forests in the river basin along the River Regen near Poesing were among the most contentious areas along this route. The ecologists have insisted that an entire 900-meter sector be drilled under this area; so, this part of the construction will be the most demanding from the technical point of view.

The planned length of the pipeline is some 340 km; half of it will lead across Bavaria and half will lead across Bohemia to Uhy, where it will separate and lead into Kralupy and Litvinov. Underground pipes with a diameter of 71 centimeters and a regular capacity of 10 million tonnes of oil per annum are planned; but up to 15 million tonnes may flow through them. The overall cost of constructing the routes and storage tanks in Trieste, Ingolstadt, and Uhy is estimated at 700 million German marks (roughly 12.6 billion korunas).

SPAIN

First National Environment Congress Opens

93WN0195B Madrid DIARIO 16 in Spanish 22 Nov 92
p 15

[Article by Jorge Sanchez Pidal: "Only 15 Percent of Toxic Waste Generated in Spain Is Treated Properly"]

[Text] *The statistics on the environment in Spain show an alarming picture of its deterioration, with enormous backwardness in comparison with the Community countries, and with a major effort to be expended in the coming years. To deal with the problem in depth, the Official Associations of Physicists and Biologists have organized the First National Congress on the Environment, intended to analyze the existing management strategies and to determine possible alternatives to the present shortcomings from a professional viewpoint. It is the first time that a meeting of this type, with representatives from all sectors, is being held in Spain.*

Over 14 million tons of industrial waste are generated in Spain each year. Of that number, more than 2 million are toxic and dangerous: that is, with a high degree of contaminating potential. Only 15 percent of this waste receives proper treatment. Moreover, 70 percent of the waste collected for recycling is managed by unauthorized persons.

Every year, our country emits into the atmosphere over 2 million tons of sulfur dioxide, primarily by burning fossil fuels in thermal power plants. The acid rain produced by them causes damage to 40 percent of the national forests.

The rivers receive 65 percent of the residual water from industries and towns, without any kind of purification, causing problems reflected in analyses of underground water, which has an increasing nitrogenated compound content. The economic cost entailed to start up the residual water purification plants currently required by towns with over 5,000 residents would exceed 1.2 billion pesetas.

Another no less important aspect is that relating to desert encroachment, for which forest fires bear much of the blame. Spain currently ranks third in the world for the expanse of land burned since 1961. During the last decade alone, over 2.5 million hectares (5 percent of the national territorial area) disappeared as a result of the action of fire. From erosion phenomena, Spain loses an annual average of 30 tons of fertile soil, most of it located in wooded and vineyard areas.

Animals do not fare any better on this list. For example, according to biologist Alberto Fraguas, 25,000 animals die in Spain every day from being run over on communications routes. This gives us a total of 10 million fatal rundowns per year.

The data would be endless. In an attempt to find solutions for these problems, the First National Congress on the Environment will open in Madrid tomorrow. The meeting will be attended by over 500 technicians, professionals, politicians, business owners, representatives of consumer associations, and ecologists attempting to pool the efforts of all the groups, based on strictly professional criteria.

"The priority is that there be unified management. Therefore, one of the petitions that will undoubtedly be submitted at the congress is for the creation of a ministry with authority that could serve as a coordinator among the various local, autonomous, and national sectors and agencies." Gonzalo Echague, president of the Association of Physicists, lists the goals a priori.

"Another issue that has not been given the proper attention is that of environmental education, from the earliest years in school. We want to deal with it in depth. The relationship between business and environment (ecological labels, green tourism), and studies made of the environmental impact as basic factors in decision-making, as well as waste treatment, atmospheric and water pollution, and the industry-environment relationship" will be topics given preeminent treatment.

According to Gustavo Garcia Bueno, representative of the Association of Biologists, one of the goals of the congress is to "raise the level of the discussion. Ecology doesn't pertain only to little birds. For example, we want to introduce awareness of the environment in the city, to improve the quality of urban life.

"Of course, the meager funding that the administration provides for the environmental area is a serious obstacle (and both Gonzalo Echague and Gustavo Garcia Bueno agree on this). However, it's not an insurmountable problem. There is a widespread and erroneous notion that the environment represents spending. But study sometimes means savings, and in two directions: money and social cost."

[Box, p 15]

Lack of Support From Administration

Gonzalo Echague, president of the Association of Physicists, underscores the agglutinating capacity of the professional associations, which will make the groups involved feel for the first time that they are all together at a table for a discussion. In Echague's opinion, the most outstanding presence is unquestionably that of the technicians, who have been largely excluded from the discussion of environmental topics until now.

Of all those involved, the administration is the one showing the least sensitivity when it is time to be concerned about a problem that is penetrating increasingly deeper into the citizens' consciousness. "Every time the government has to trim its budgets, the item suffering most is the environmental one. To say the least, this year they have dealt a genuine 'hatchet blow,' and we

find the amount earmarked for environmental funding to be half of what was allocated for it five years ago."

Hence, it comes as no great surprise to the congress organizers that the official backing has been minimal. "We have felt all alone, and regret the lack of government aid to organize the congress. It's only when they have seen everything set up that they take note. Now, we even have protocol problems in accommodating the public officials who have confirmed their attendance."

The forum has been structured with 12 technical sessions, roundtable discussions, and task forces which will debate the communiques and reports submitted.

The National University for Extension Education, the Ministry of Industry, Commerce, and Tourism, and the magazine *ECOLOGY AND SOCIETY* have collaborated with the professional associations in organizing the congress.

Increase in Production, Export of CFC's Denounced

93WN0195A Madrid DIARIO 16 in Spanish 23 Nov 92 p 19

[Unattributed article: "Production, Export of CFC's Rose in Spain Last Year"]

[Text] The production of chlorofluorocarbons [CFC's] in Spain rose during 1991, according to the latest official data from the Ministry of Industry made available to the Ecological Association for Protection of Nature (AEDE-NAT). This increase, in both industrial production and exports of CFC's, runs counter to the recommendations of the Montreal Protocol and the London Conference, calling for a progressive reduction in these products that are so harmful to the ozone layer.

According to the data from the Industry Ministry, CFC production posted a 6 percent increase over the 1990 figures, while exports rose by 22.7 percent. During 1990, 25,438 tons were produced in Spain, compared with 26,962 last year. Exports increased from 12,685 to 15,564 tons during the same time period.

The AEDENAT considers this production rise an indication of "a lack of political will on the government's part to solve this serious environmental problem."

Tomorrow, in fact, the Montreal Protocol conference opens in Copenhagen, and will attempt to seek means of controlling the new substances just discovered as destroyers of the ozone layer, eliminating the so-called transitory products, and obtaining the funds required for this, according to an EFE agency report.

From 23 to 25 November, a total of 81 countries, the majority represented on the cabinet level, will decide on the control and elimination of the products responsible for the earth's increased exposure to harmful solar rays.

During the past five days, the task forces preparing for the Fourth Conference of the Montreal Protocol decided to hasten the elimination of chlorofluorocarbons and carbon tetrachlorides before 1996, instead of the year 2000 set previously.

These substances, used in aerosols, and refrigeration and insulating systems, are being replaced by a transitory product, called hydrochlorofluorocarbon (HCFC), which is less damaging to the atmosphere, but still harmful.

Based on the accord due to be ratified by the ministers now, the date for the elimination of the halogens used in extinguishers, and of methylchloroform, will be moved ahead to 1994. This measure will constitute "essential progress," in the opinion of the executive director of the United Nations Program for the Environment (UNPE), Mostafa K. Tolba.

A few years ago, the signers of the Montreal Protocol of 1987 "agreed on a 50 percent reduction" in CFC's by the year 2000: a figure raised to 100 percent three years later. Now, however, there is agreement on total elimination by 1996, as Tolba emphasized.

To date, a total of 92 countries, representing over half of the world's population, but producing and consuming nearly all the harmful chemical products, have signed the Montreal accord to protect the ozone layer. Recent reports indicate that the ozone is being destroyed at a greater speed than anticipated, affecting both hemispheres, with the sole exception of the tropics.

Nevertheless, scientific advances indicate that the harmful substances could be eliminated sooner than expected, although the ministers gathered in Copenhagen will find themselves confronted this week with very difficult problems to be solved. One of them is methyl bromide, used in agricultural fumigants. It has just been included on the list of harmful substances, but the experts are divided regarding its toxicity and the most feasible period for its elimination. Nor is it clear how to dispense with the transitory HCFC's, which have effects that are less harmful than those of the CFC's but, according to the ecologists, will prolong the destruction of the ozone for several years. Hence, their elimination is being sought.

The final controversial point concerns the funds for implementing the Montreal Protocol in the less developed countries, and for financing the transition from toxic substances to other neutral ones, as well as the transfer of technology from the industrialized nations.

SWEDEN

Ministry's Draft Recycling Plan Stirs Debate

93WN0179A Stockholm DAGENS NYHETER
in Swedish 29 Nov 92 p 6

[Article by Erika Bjerstrom: "Industry Wants To Stop Recycling; Controversial Government Proposal To Be Ready by Christmas"]

[Text] A steady stream of representatives of industry is now calling on the Environment Ministry. They are trying to stop this fall's big environmental bill, one which, according to the Center Party, is a "change of direction" for the country's environmental policy. Industry will be required to take back its discarded products, following the German model.

Things are not easy for Lennart Daleus (Center). He sits in a cubbyhole at the Environment and Natural Resources Ministry and is responsible for the government's major recycling bill. The expectations in Sweden's environmental movement are sky-high. This is the fall's only major initiative from Environment Minister Johansson.

To begin with, according to DAGENS NYHETER sources, the government will impose requirements for recycling on four sectors in the economy:

- Packaging
- Paper which can be recycled
- Batteries (nickel-cadmium)
- Sludge from municipal sewer treatment plants. Most probably the government will start with the Nature Protection Federation's old proposal to introduce maximum limits on toxins in sludge. Next a charge will be made on sludge based on how high its toxic content is. The aim is to get sludge which is clean enough to be spread on fields.

Ready by Christmas

The trash collection law will also be rewritten so that producers as well will be responsible for seeing to it that packaging and newspapers are recycled.

It should be ready by Christmas.

Olof Johansson estimates he will be able to submit the recycling bill on 18 December. He said this to the TIDNINGARNAS TELEGRAMBYRA news agency.

"Our timetable calls for a report to come back from the Draft Legislation Advisory Committee on 3 December. We will submit it to the Riksdag before Christmas."

"The bill got tied up in the budget process, but I expect a breakthrough very soon so it will get out around the end of the year. This is the current plan," Johansson said.

Government Divided

At the moment Environment Ministry officials are performing a political balancing act. But the Center Party is finding it difficult to gain a hearing within the halls of government.

Skeptical government partners, particularly within the Liberal and the Moderate Parties, do not welcome any new taxes on industry given current poor economic conditions.

"We have different perceptions within the government; it would be stupid to deny it," Daleus confirmed.

One of the concessions the Center Party extracted was backing down from a detailed timetable for when industry should achieve its recycling goal.

Change of Direction

Lennart Daleus is doing nothing to minimize expectations.

"It's a challenge to launch a recycling bill when economic conditions are poor, but it means a change of direction in Swedish environmental policy," he told DAGENS NYHETER. The political vision which is a dream is that of the recycling society (see associated article [not reproduced here]).

The key word in the government's recycling bill is producer responsibility; manufacturers are supposed to reclaim their products and make sure they are recycled or stored in what from an environmental standpoint is considered to be an acceptable manner.

Most probably the bill will set out principles, to the disappointment of the environmental movement.

Binding Laws

Industry has conducted intensive lobbying to prevent binding laws. The plastics industry has invested 1 million kronor in the form of full-page advertisements in the daily press aimed personally at Lennart Daleus. In these he is accused of having misunderstood the environmental risks of polyvinyl chloride plastic.

The Plastics Industry, the Federation of Wholesalers and Importers, Tetra Pak, the Newspaper Publishers' [Association], and Forest Industries are some of the groups which have paid visits to the Environment Ministry at Tegelbacke.

They want to keep Sweden from introducing the German model. In Germany industry was given two messages by the country's environment minister: "In the future you will be responsible for taking back and recycling your discarded goods and products. By 1995 at the latest you will achieve a 65-percent recycling level. Then we will move the crossbar up. We will not get involved in how you manage this."

"The Swedish packaging industry is managing very well in Germany. One cautious conclusion is that it should also manage in Sweden," Daleus commented.

Simplified Solution

Jan Remrod, the head of Forest Industries, an interest group for the forest industry, is very irritated.

"It's outrageous for them to have chosen us as an experimental industry. The forest industry is already working in the spirit of recycling. The government is out

to regulate a nonexistent problem. Producer responsibility is a political invention, a simplified solution."

Instead he thinks the government should crack down on sectors which are the furthest away from a recycling philosophy and mentioned the plastics industry as an example.

The industry refuses to accept a percentage recycling goal, following the German model.

"Make greater demands on consumers so they sort by source; producers are not the only ones demanding packaging," said Richard Almgren, the environment head at Tetra Pak.

But in Germany Tetra Park has managed to abide by policy requirements and by 1995 will be recycling 64 percent of its packaging, from having recycled nothing at all.

There are several reasons packaging was selected as a symbolic issue in the recycling bill.

"It's a well known environmental problem which has been extensively researched. There is a working foreign model and it's an urgent environmental issue on which there are acceptable ways of proceeding," said Daleus.

From Cradle to Grave

He asserted that the bill will not represent any economic catastrophe for the business community.

"I believe there is a readiness within industry to take responsibility for goods from cradle to grave."

His goal is to have Sweden take its place among the leading environmental nations in the EC: Germany, the Netherlands, and Denmark.

"We certainly can't approach the EC with lower ambitions than the ones they have."

Researcher Is Critical: 'Recycling Impossible in Sweden'

The recycling society has become the latest buzzword for the environment. But researchers have said that such a society is an impossibility in today's Sweden. They accuse the Center Party of having created false expectations.

In barely a year the word recycling, which means that waste becomes a resource and gets recycled, has become a new buzzword in the environmental debate. It is often used as a synonym for the more used word the environment.

Last summer a "recycling festival" was organized in Stockholm; recycling conferences are held; the newspaper KRETSLOPP [Recycling] has been born; and every trend-conscious business leader throws the word recycling into his environmental speeches; and now the Environment Ministry has come up with a recycling bill.

But when the Center Party says they want to create a recycling society, Staffan Delin, the dean of recycling researchers in Sweden, reacts. He teaches recycling technology at the Technical University in Lulea.

"Lennart Daleus and other Center Party members are creating expectations which they cannot fulfill. They have not understood the consequences of a recycling economy. The concept is not open to political interpretations but rather has a strict, scientific definition," he stated.

In recycling, resources are recreated from waste with the sun as the only energy source. In a recycling society no oil, uranium, or coal can be used, since they drain nature's capital.

The reason for this is that man, unlike the environment, is not able to transform smoke back into wood. Nature, on the other hand, turns ashes into fertilizer and plants bind carbon dioxide.

"That is why man's mind-boggling rapid consumption of fossil fuels conflicts with natural laws."

Delin believes that if politicians are serious about creating a recycling society, they must set up a society in which man recreates just as many resources as he uses.

"So we also have to be honest and say that doing away with fossil fuels and nuclear energy means that industry will shut down and that our entire social structure will be different."

The old agrarian society was a recycling society, in which man was continually renewing resources.

"Then we learned how to use fossil fuels and invented the steam engine. Then man thought he had liberated himself from his dependence on nature and could create a rational paradise."

Town Serving as Model for National Recycling

93WN0177D Stockholm DAGENS NYHETER
in Swedish 3 Dec 92 p 8

[Article by Erika Bjerstrom: "Skara Model for Cleaner Sweden"]

[Text] Skara—It is a little embarrassing to look at the conveyor belt on which the trash discarded by Skara residents moves by. It is sorted by hand in an ultra-modern facility. About 70 percent of household waste is recycled. The town of Skara is the first in the nation to set up a recycling plant of the German type.

An old brassiere, a discarded chocolate box, a summer postcard from Agneta and Jan, a shampoo bottle, a peanut container, a bathroom mat in perfect condition, egg cartons and an old photo album are among the items that move along the belt in a steady stream.

In the past, trash was our own private concern; anything we wanted to throw away, get rid of, or forget ended up in the trash can. But not any more.

In Skara the cleaner Sweden of the future is already a reality. By 1994 at the latest all communities must implement source screening of household waste. At that time it will no longer be possible to burn or dump unsorted rubbish.

In the past Skara residents threw their trash on the dump. Now everything goes through the gigantic recycling plant. It is inspected, the materials are determined, and everything is sorted.

Some 19,000 People Involved

A total of 19,000 municipal residents have been involved in an entirely new system since 1990. At home in the kitchen refuse is sorted into two categories—wet and dry. The goal is to minimize wet garbage; the town encourages residents to compost their own garbage. Those who reduce the amount of wet garbage are rewarded with lower trash rates.

The dry waste consists of newspapers, cardboard, glass, plastic, and aluminum, to name some of the materials. Everything must be clean.

Before the new system went into effect the municipality launched a big information campaign. For example, every school class was visited by an environmental consultant and instructed in sorting techniques. When the new trash system was implemented a telephone number was provided where people with questions could call and receive information. Hundreds of calls a day came in with questions like this: "Where should I put the snuffbox?" A recent survey showed that 74 percent of the town's inhabitants approve of the system.

Thus the politicians in Skara are the first in the country to introduce trash recycling on a large scale. The dry trash is recycled, the wet material is sorted mechanically and then put in the dump where it produces enough methane gas to heat 450 homes.

Action

"We thought it was time to move from words to deeds," said Per Gustafsson, a Center Party member and vice chairman of the municipal council.

A small delegation of Skara politicians and civil servants went to Denmark and Germany on a study trip.

"We did not find any good models in Sweden. There were isolated projects where households presorted their trash, but these were always in areas with single-family homes. We wanted a system that worked in multifamily housing and in rural areas as well."

Skara also wanted a system that could be expanded in the future. For that reason it was decided to have the sorting done in a plant instead of placing the responsibility on

individual households. In this way more and more materials can be sorted out as soon as recipients who want the materials are found. The quality of recycled material is also better due to the fact that when consumers sort glass and paper themselves things often end up in the wrong place.

A pilot plant was built in Axvall outside Skara at a cost of 15 million kronor. It is operated by the municipality and Sellbergs Renhallning AB in a joint company, Skaraborgs Miljö och Energi AB.

Good Working Conditions

Great attention has been paid to the working conditions of the people who sort the trash manually. The Skara delegates were troubled by what they saw in the German plant. As DAGENS NYHETER reported earlier (19 April 1992), the German trash is sorted by immigrants who stand in a cellar in the recycling plant outside Bonn. Personnel turnover is very high.

In the Swedish plant there is a partial vacuum in the room where the manual sorting is carried out. This keeps dust and mold particles from swirling around in the air. The work is performed in daylight and there is no odor. The four employees take turns doing all the work in the plant, everything from sorting trash to driving a truck and supervising the machinery. The four people who were hired at the beginning are still there.

"Sorting is hard on your shoulders, but we only do it a few hours at a time," said Tomas Sjoang.

Surplus Capacity

He was amazed at the things people throw out and said he has bought fewer items in disposable packaging since he started working at the plant. At present the plant has a surplus capacity. All milk cartons, for example, pass by on the belt and are not taken out by the sorters.

"The packaging industry will not repurchase them, but we could start sorting out all the beverage containers tomorrow," said Bengt Hofling, plant manager.

Hard plastic is not sorted out either; detergent, dishwashing liquid, and shampoo bottles vanish into the incinerator or are thrown on the dump.

Like Gustafsson, Hofling wants the politicians to send clear signals.

"Households are now thoroughly regulated where trash is concerned, but anything goes for industry," they said.

They hope the government's recycling bill, which will be presented soon, will contain binding laws that force the plastic and packaging industries to start recycling their material.

Not Enough Customers

"Deadlines must be set for industry to meet partial goals, just as they have done in Germany," is the message

municipal politician Gustafsson (Center) had for Environmental Affairs Minister Olof Johansson (Center).

Skara's recycling plant handles 4,300 tons of trash, but should be able to process close to 25,000 tons. For the time being the plant is operating at a loss while it waits for more industrial customers who will repurchase their discarded and sorted products.

"But you must remember that this plant does not really solve the main problem of the growing mountain of trash. In the long run we must throw fewer things away," Gustafsson said.

Environment Laws To Be Adapted to EEA Standards

93WN0177C Stockholm DAGENS NYHETER
in Swedish 19 Nov 92 p 6

[Unattributed article: "Stricter Environmental Requirements To Remain in Force"]

[Text] To enable the big European Economic Area (EEA) market to function smoothly regulations are needed in many adjacent areas such as the environment, consumer issues, etc.

The Environment

Sweden can keep its stricter environmental requirements during a transition period. The transition deadline for car exhaust emissions is 1 January 1995. So far no final date has been set for adapting the Swedish regulations on asbestos and freon, for example, to EC standards.

The EC is trying to pinpoint environmental regulations that can be regarded as technical trade barriers, i.e., those associated with products that are entitled to be sold freely on the EC's internal market. In principle one EEA country is not allowed to apply stricter rules than the others in such cases.

In most areas the Swedish environmental regulations are stricter than those of the EC. But there are some exceptions, for example with respect to noise, where Sweden must adapt its requirements to the EC's minimum level.

Job Environment

Sweden will adopt the EC regulations in the job environment area. The EC's so-called directives are generally minimum requirements. In principle there is no obstacle to imposing stricter rules.

Research

Sweden can participate in the EC's entire general research program (besides Euratom), which has a budget of 42 billion kronor for the period 1990-94.

Consumption

Some 20 consumer directives, concerning such different areas as hazardous toys, the design of life jackets, noise

from lawn mowers and household appliances, rules for door-to-door sales and the layout of TV advertisements, will be introduced in Sweden. In some cases this involves minimum requirements, in others binding norms.

Statistics

After various transition periods Sweden will adapt to the EC's ongoing harmonization of statistical output.

Company Laws

Sweden will adopt the EC's minimum rules concerning capital requirements, financial statements, mergers, and liquidation. The EC is not trying to achieve total coordination in this area.

Country's Law Banning Freon Studied by EC

93WN0177B Stockholm SVENSKA DAGBLADET
in Swedish 22 Nov 92 p 6

[Article by Hans Strandberg: "Other Countries Meet To Copy Swedish Freon Ban"]

[Text] Swedish emissions of ozone-destroying freons have been reduced by around 70 percent in three years, according to figures from the Environmental Protection Board. On Monday environmental ministers from around the world will meet in Copenhagen to copy the Swedish example and phase out the use of freon by 1995.

Can Act in Concert

Steps to save the ozone layer are one of the best examples that the world can act in concert to solve a global environmental problem if it wants to. The so-called Montreal protocol calls for the industrialized nations to stop using the most aggressive hard freons by the end of the century, while the developing countries are being given a little more time.

This has led to a 40-percent drop in the world consumption of freon since 1986 and the decline is continuing.

But in spite of that the picture is not entirely bright.

One reason is that it has been shown in recent years that the thinning of the ozone layer, which causes skin cancer, damages eyes and immune defenses, and upsets marine ecosystems, has gone farther than even the worst pessimist could have anticipated. The problem is now also obvious in the Northern Hemisphere and the hole over Antarctica keeps growing.

Another is that some of the substitutes for this "dream chemical" that can be used for almost everything are not environmentally benign. The so-called soft freons contain considerably less chlorine, but are still corrosive.

A third reason is that several developing countries, especially India and China, are manufacturing their own refrigerators and freezers at a furious pace. They use old, cheap freons and are unlikely to switch unless the West contributes technology and money. The fund that was

established for this purpose last year has not been replenished as fast as the industrialized countries promised at that time.

Must Agree on Stricter Measures

Therefore the environmental ministers from 91 countries plus the EC will now meet in Copenhagen and try to reach agreement on several points aimed at tightening the Montreal protocol.

One proposal is to stop the use of hard freons and halons, which are found in fire extinguishers, by 1995, another calls for a plan to phase out soft freons as well.

"It is not enough. A new agreement would also allow the use of freon into the 21st century. Life on earth needs a total halt now," commented Mats Abrahamsson of Greenpeace.

Even that would not end the thinning of the ozone layer. For one thing, freon takes time to reach the stratosphere, for another, its aggressive chlorine atoms can gobble up ozone molecules for almost 100 years without being exhausted.

Sweden has played a leading role in this area, both as an international activist and as a national model. As early as 1988 it was decided that Sweden would move by stages toward a total ban on freon use by 1 January 1995.

Good Result

So far the result has been very good. Between 1988 and 1991 use declined by a good 70 percent.

"In most cases freon has been replaced by entirely chlorine-free alternatives, but the use of soft freons has increased, especially for firm foam rubber and refrigerants," said Environmental Protection Board expert Ulrika Hagbarth.

She thinks it should also be technically possible to replace soft freons by the turn of the century. To achieve that the board has proposed a ban on some uses starting in 1995 and an environmental control fee for refrigerants.

"The biggest problem is still dry cleaning, where good alternatives have not yet been found. Technical development in this area is under way, but freon will probably be replaced by tetrachloroethylene, which is not good from the perspective of the job environment," Hagbarth said.

Environment Effort Seen Victim of Recession

93WN0177A Stockholm DAGENS NYHETER
in Swedish 22 Nov 92 p 5

[Article by Erika Bjerstrom: "Environmental Efforts Slowed by Recession"]

[Text] Environmental consultants are getting fewer assignments. The environment director at SAS has left and 97 percent of Swedish manufacturing firms do no

independent environmental work. At the same time municipalities are cutting down on their environmental supervision of industry.

There are increasing indications that industry's environmental efforts have stagnated during the recession.

Sweden's lakes, forests and fields are still strongly affected by the discharge of environmentally hazardous industrial waste. According to the Environmental Protection Board the industrial cleanup job will not be accomplished until well after the turn of the century. The use of chemicals in industry and the mountain of waste are two high-priority problems.

But the tempo of industry's environmental effort has slowed:

- The 200 environmental consultants affiliated with the Swedish Steam Users' Association are getting fewer and fewer assignments. Hans Norrstrom, retiring executive director of the Steam Users' Association, confirmed that demand has decreased, but declined to cite any figures.
- Environmental auditors are essentially acquiring no new client firms.

"Getting new firms to sign up for an environmental review is very slow work. I try to attract firms by arguing that they should review their environmental situation in light of anticipated requirements and eventual economic recovery, but the work is at a standstill," said Axel Wenblad, chairman of the Environmental Auditors of Sweden, which has 230 members.

A comprehensive study carried out at Lund University reveals the level the Swedish business sector has reached in environmental work.

"The results of our research are alarming. Some 97 percent of Swedish firms pursue no independent efforts beyond what they are required to do by the authorities," said Peter Arnfalk, who wrote the report together with Ake Tidell.

Counteract Requirements

The researchers interviewed representatives of 312 Swedish firms and asked a number of questions about their environmental efforts. The companies were graded on a five-point scale. The lowest grade is "environmentally passive," firms that counteract the requirements of the authorities and take no initiatives on their own.

Only 3 percent of the manufacturing firms received the highest grade, those who pursue an independent environmental effort in addition to the requirements imposed by the authorities.

"The problems are greatest for small and medium-sized companies. They do not have the resources to assimilate environmental information. The situation is better for

Sweden's 25 largest companies, as our study shows. Some 70 percent pursue their own environmental policy," Arnfalk said.

Green Veneer

In its report the environmental organization Greenpeace is highly critical of industrial "greenwashing," a term that has quickly gained ground and describes the reduction of environmental efforts to an attractive green veneer.

"In 1989 we believed in industries' serious resolve to change their production and reduce the discharge of waste. But the effort to produce their own environmental strategy became an end in itself. Once one is written they do not go any farther," said Joakim Bergman, the person responsible for industrial matters at Greenpeace.

SAS is one of the companies accused of "greenwashing."

SAS has an environmental policy that never went into effect and environment director Jorgen Grauegaard left last summer. Now he is an environmental consultant for the EC but will also work with SAS. In the newsletter MILJORAPPORT one SAS employee commented:

"SAS is fighting for its life. When you are drowning you don't care if the water around you is polluted or not."

Recession

"Don't complain about industry, we are fighting for our lives and under these circumstances there can be no environmental investment," said Lars Gunnar Larsson, environment director of the Federation of Swedish Industries, with which 5,000 Swedish firms are affiliated.

"Our environmental aims are still high, but our possibilities are severely restricted by the recession.

"This is a lesson demonstrating that environmental efforts require growth and depend on the state of the economy," he said, addressing his remarks to the environmental movement.

The federation also opposes environmental taxes, which would lower industrial competitiveness. According to Environmental Affairs Minister Olof Johansson such taxes are the most important instrument for reducing the dumping of industrial waste.

"We cannot be enthusiastic about environmental taxes in this situation, it would be hypocritical," said Larsson. He called on Swedish politicians to pursue negotiations on the global level in which the EC, the United States, and Japan simultaneously decide to impose environmental taxes on such things as carbon dioxide emission.

Sorting Waste

But there are exceptions, companies that feel that even in a recession there are opportunities to pursue environmental efforts aggressively.

Perstorp Plastic Systems has begun sorting its waste and has reduced the pressure on the municipal dump by 30-50 percent. This has led to reduced costs for the company.

"A mental depression prevails where everyone is hypnotized by the problems. Instead people should look beyond the recession and use this period to get themselves ready for the time when the economy turns upward," said Kerstin Gustafsson, the person in charge of environmental matters and information at Perstorp Plastic Systems. She advises companies to examine the possibilities of recycling.

"There are clear political signals that taxes may be imposed on disposable packaging. In an economic boom prices for unused raw material rise and then the recycling system will be profitable for industry."

Waiting for EC To Act

The lack of courage is due to the fact that everyone is waiting to see what will happen in the EC.

"No one wants to be first, but that is due to lack of knowledge about the EC. Look at the French, they do as they please and have been EC members for a long time."

Swedish cities and towns are also cutting down on their environmental activities. Environmental civil servants' own organization, which carried out the study, noted that environmental and health protection measures are the big losers.

Environmental spending represents 0.5-1 percent of municipal budgets. Some 68 municipalities are dismissing personnel. Several environmental directors told DAGENS NYHETER that they must now lower their sights with regard to industrial inspection and supervision.

SWITZERLAND

World Green Cross Ecological Organization Created

*AU1812215992 Paris AFP in English 2059 GMT
18 Dec 92*

[Text] Bern, Dec 18 (AFP)—Environmentalists Friday founded the World Green Cross ecological organization, modelled after the Red Cross, pledging close cooperation with the United Nations and calling for 10 million dollars in government aid.

The funds would be paid out over five years.

The organization which, like the Red Cross, aims to attract the largest number possible of countries comes into being after the Earth summit in Rio de Janeiro in June and is seeking close ties with the United Nations which has itself plans for an international center for emergency environmental assistance.

Jean-Claude Veillon of the Charles Veillon company will be the Geneva-based organization's first president.

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